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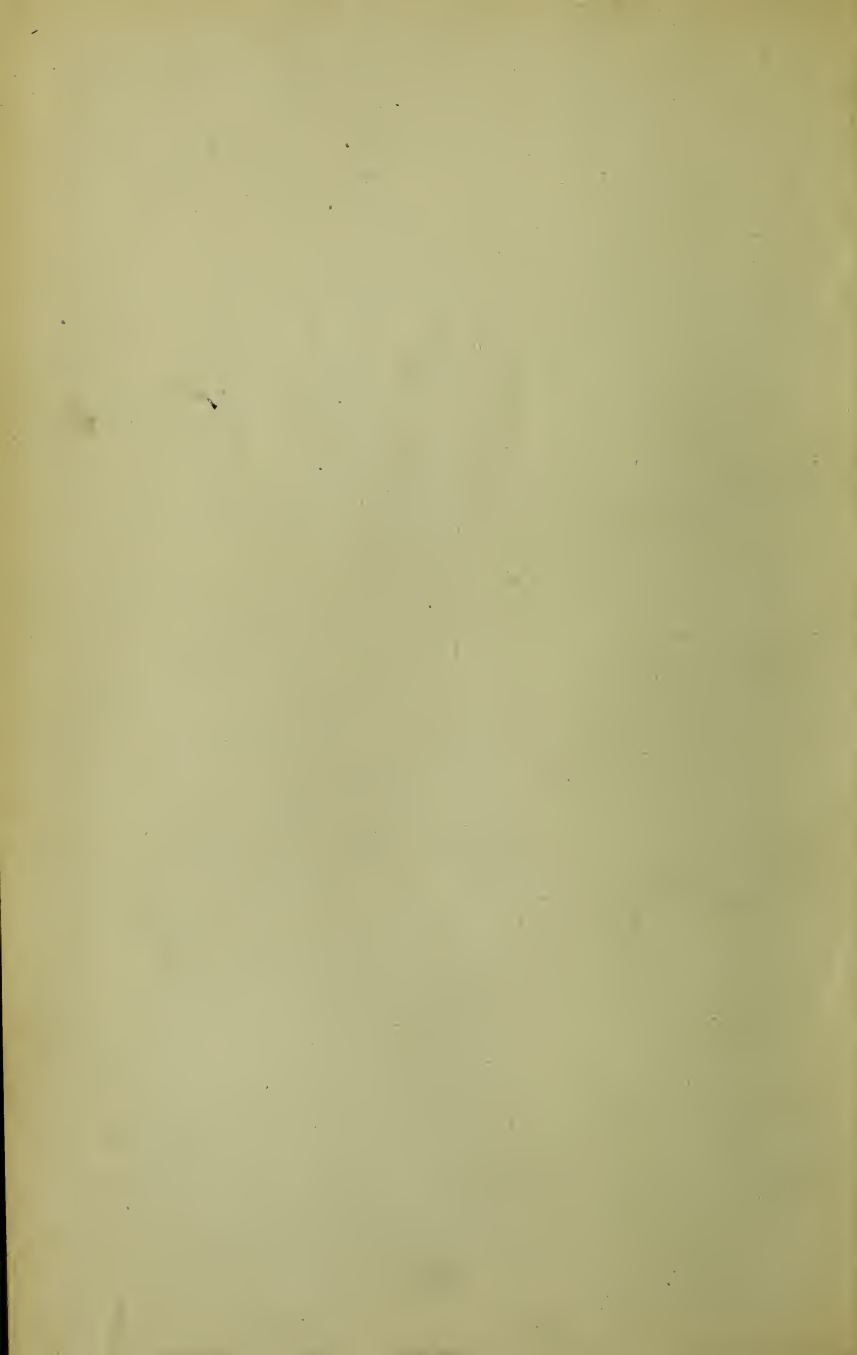
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A
COMPEND
OF THE
PRACTICE OF MEDICINE.

BY

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THIRD EDITION, REVISED AND ENLARGED.

EDINBURGH AND LONDON :
YOUNG J. PENTLAND.
1888.

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PREFACE TO THE THIRD EDITION.

The "third edition" of the Compend has been thoroughly revised, which, together with the addition of new points in treatment, it is hoped will add materially to their value and usefulness.

I again express my sincere appreciation of the favor with which the "Compend" have been received.

D. E. H.

September, 1887.

PREFACE TO THE SECOND EDITION.

The exhaustion of a large edition of the "Compend" has imposed on me the necessity of preparing a second edition. I have accordingly given to the whole of it a careful revision, incorporating the more recent improvements in practice. Many additions have been made, and parts have been entirely rewritten, thereby adding considerably to the size of the book.

I take this opportunity to express my sincere appreciation of the favor with which the "Compend" has been received.

D. E. H.

PREFACE TO THE FIRST EDITION.

This "Compend" is the outgrowth of the author's system of notes, as employed in the Quiz-room during the past four years.

Written for students of medicine, it has been his aim to present, in as compact a form as is consistent with clearness and completeness, the most essential features of the Practice of Medicine.

From the inability of students to follow the lectures by reading large text-books, it is believed that this Compend will be a valuable aid in the acquisition of the fundamental facts, although it is not to be considered as a substitute for the more elaborate treatises on the subject—they are to fully teach, this only to remind, the student.

It may be regarded as a full set of notes upon the Practice of Medicine, and as such, it is hoped, will prove far more valuable and satisfactory than the ordinary imperfect and hurriedly taken notes.

Free reference has been made to the works and writings of Professors Da Costa, Bartholow, Flint, Reynolds and Roberts, acknowledgment of which is made here, in place of by foot notes on the different pages.

D. E. H.

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COMPEND

OF THE

PRACTICE OF MEDICINE.

PART I.

INTRODUCTION.

The Practice of Medicine embraces all that pertains to the knowledge of, prevention and cure of, the diseases which the physician is called upon to treat.

Disease may be defined as a deviation or alteration in the functions, properties or structure of some tissue or organ, whereby its office is no longer performed in accordance with the natural standard ; *Organic*, when associated with an organic change in the affected part ; *Functional*, when the phenomena are independent of any ascertainable structural lesion.

The study of disease, whether organic or functional in character, is termed *Pathology*.

Pathology explains the *origin, causes, clinical history* and *nature* of the morbid conditions to which the economy is liable.

Ætiology, or the causes of disease, are twofold, to wit : *Predisposing* and *Exciting*.

Predisposition to disease signifies a special liability or susceptibility to its occurrence, and may be either *hereditary* or *acquired*.

Hereditary predisposition to certain diseases is also called *Diathesis*, to wit : the offspring of phthisical parents are said to be of a Phthisical Diathesis.

Diathesis is a morbid constitution, predisposing to the development of a particular disease, and may be either inherited or acquired.

Acquired predisposition is such as arises from

- I. *Habits*, to wit: Strain upon the nervous system resulting in nervous diseases.
- II. *Age*, to wit: Children are very liable to catarrhal disorders.
Young adults, to fevers and perverted sexual disorders.
Middle age, to heart, kidney, and digestive disorders and cancer.
Old age, to degeneration of the heart and vessels.
- III. *Occupation*, to wit: Miners, weavers and cutlers, lung diseases.
- IV. *Sex*, to wit: Women, emotional nervous diseases.
Men, as more exposed, rheumatism and pneumonia.
- V. *Race*, to wit: Negro, phthisis and scrofula; exempt from malaria.

Exciting causes of disease are divided into those acting from *within* and those acting from *without*.

Causes from within are the *emotions* and *passions*, to wit: fear may produce chorea; anger has caused jaundice; worry, heart troubles.

Causes from without are *food*, *air* and *light*.

The Clinical History of disease includes all the symptoms and signs which may occur from the *period of incubation* until its final *termination*.

Symptoms are such alteration in the healthy functions as give evidence of the existence of a diseased condition or perverted function, and may be either *objective* or *subjective*. *Objective*, when evident to the senses of the observer, such as redness or swelling. *Subjective*, when felt by the patient, such as pain or numbness.

The Period of Incubation is that interval between the entrance of the poison into the system and its manifestation, and seldom presents recognizable symptoms.

The Prodromes are the earliest recognizable symptoms; as the rigors or chills during the invasion of fever, and the various aura preceding an epileptic fit.

Acute disease is one in which the invasion is rapid, and, as a rule, severe; when the symptoms develop less rapidly and are less intense the disease is said to be *subacute*; when gradual or slow in development the disease is said to be *chronic*.

Pathognomonic is the term applied to such symptoms as belong to one particular disease, and are therefore characteristic of it, to wit : the rusty sputum of pneumonia.

Physical signs are, strictly speaking, *objective* symptoms.

The Termination of a diseased action may occur in one of three ways, to wit : *Cure*, *Secondary Processes*, or in *Death*.

Cure may occur by

- I. *Lysis*, or slow return to health.
- II. *Crisis*, abrupt termination, usually with a critical discharge.
- III. *Metastasis*, or changing from one location to another.

Secondary processes is when the diseased action is substituted by a new morbid process, to wit : Rheumatism followed by endocarditis ; apoplexy by cerebral softening.

By *Death* is meant a complete cessation of tissue change occurring by

- I. *Asthenia*, or an ever increasing debility, to wit : phthisis, cancer, Bright's disease.
- II. *Anæmia*, or insufficient quantity or quality of blood.
- III. *Apnæa*, or non-aeration of blood, to wit : acute lung diseases, or croup.
- IV. *Coma*, death beginning at the brain, to wit : uræmia, narcotic poisoning, cerebral hemorrhage.

Morbid or Pathological Anatomy is the knowledge of diseased structure or tissue changes.

Diagnosis of disease implies a complete, exact and comprehensive knowledge of the case under consideration, as regards the origin, seat, extent and nature of all the morbid conditions.

A direct diagnosis is made when the morbid condition is revealed by a combination of clinical phenomena, or some one or more pathognomonic symptoms.

A differential diagnosis is the result when the diseases resembling each other are called to mind and eliminated from each other.

A diagnosis by exclusion is by proving the absence of all diseases which might give rise to the symptoms observed, except one, the presence of which is not actually indicated by any positive symptoms.

Prognosis of disease is the ability or knowledge to foretell the most probable result of the condition present, and involves an amount of tact or knowledge only acquired by prolonged clinical experience.

Treatment. The ultimate and most important object of the study of medicine, from a practical point of view, is to learn how to

cure, relieve or prevent disease, and it must be borne in mind that this *does not consist solely in the administration of drugs*, but requires strict and faithful attention to *diet and hygiene*.

When the object is to prevent disease, such as smallpox by vaccination, it is called *Prophylactic* or *Preventive* treatment.

When disease is to be broken up, although already begun, to wit: aborting the chill of malaria, it is called *Abortive* treatment.

When the disease is allowed to run its natural course without attempting its removal, but being constantly on the alert for obstacles to its successful issue, to wit: the generally adopted plan of treating continued fevers, it is called *Expectant* treatment.

When the disease is incurable, and removal of marked suffering is the indication, it is called *Palliative* treatment.

When marked weakness and prostration are to be overcome, it is called *Restorative* treatment.

FEVERS

Fever is a condition in which there are present the phenomena of *rise of temperature, quickened circulation, marked tissue change and disordered secretion*.

The *primary cause* of the fever phenomena is a disorder of the sympathetic nervous system giving rise to disturbances of the vasomotor filaments.

Rise of temperature is the preëminent feature of all fevers, and can only be positively determined by the use of the clinical thermometer. The term *feverishness* is used when the temperature ranges from 99° to 100° Fahr.; *slight fever* if 100° or 101°; *moderate* 102° or 103°; *high* if 104° or 105°; and *intense* if it exceed the latter.

Quickened circulation is the rule in fevers, the frequency usually maintaining a fair ratio with the increase of the temperature. A rise of *one* degree Fahr. is usually attended with an increase of *eight* beats of the pulse per minute.

The tissue waste is marked in proportion to the severity and duration of the febrile phenomena, being slight or nil in febricula, and excessive in typhoid fever.

The disordered secretions are manifested by the deficiency in the

salivary, gastric, intestinal and nephritic secretions, the tongue being furred, the mouth clammy, and there occurring anorexia, thirst, constipation, and scanty, high-colored, acid urine.

An **Idiopathic** or **Essential** fever is one in which no local affection causes the fever phenomena, although lesions may arise during its progress.

A **Symptomatic** or **Secondary** fever is one dependent upon an acute inflammation.

GENERAL TREATMENT OF FEVERS.

1. Reduce the temperature. The cold bath or cold pack will do this most decidedly, but entails much labor and is not altogether free from danger, and so its use is advised only in severe cases. Cool sponging is of decided advantage. *Quinina*, in gr. xx doses repeated, is usually reliable. *Antipyrin*, gr. xx repeated, is also recommended.

2. Lessen the circulation. If the pulse be full, strong, and rapid, use *aconitum*. If the circulation be weak, *stimulants* with *digitalis* or *caffaina*, are indicated.

3. Attend to the secretions. Remove the waste of the tissues by diuretics, diaphoretics, and, if particularly indicated, laxatives. The free use of water is beneficial in promoting the various secretions.

4. Nourish the patient. "Don't starve a fever." Administer milk, beef-tea, and other light nutritious food, in small quantities, but at frequent intervals.

CONTINUED FEVERS.

All continued fevers are characterized by a steady progress of the febrile movement, without either a too decided rise or fall in the temperature to modify the impression of a continuous action.

SIMPLE CONTINUED FEVER.

Synonyms. Irritative fever; febricula; ephemeral fever; synocha.

Definition. A continued fever, of short duration, mild in character, not due to a specific cause, rarely fatal, but when death does occur, presenting no characteristic lesion.

Causes. Fatigue, mental and physical; exposure to heat or cold; excesses in eating and drinking; excitement and violent emotion. Most common in childhood.

Symptoms. An abrupt feeling of *lassitude*, followed by a decided *chill* or *chilliness*, a sudden and rapid *rise of temperature*, quick, *tense pulse*, *headache*, *dry skin*, *intense thirst*, *coated tongue*, and *scanty, high-colored urine*. Cases due to errors in diet are accompanied with *nausea* and *vomiting*; those occurring during childhood, due to excitement, fright or the emotions, may be associated with *slight convulsions*. The *temperature* may, within an hour or two, reach 103° F. or more, when slight *delirium* may occur.

Duration. From twenty-four hours to six or seven days. Never exceeding ten days.

Termination. Within a few hours, to a day, the temperature rapidly falls to the norm—(*crisis*); or it may continue for several days gradually falling—(*lysis*). *Herpes* about the lips and nostrils are often observed at the close of an attack. *Convalescence* is rapid.

Diagnosis. Unless the fever can be attributed to some one of the causes that give rise to it, a doubt as to its character may exist for the first twenty-four hours, after which time it can hardly be mistaken for any other affection.

Prognosis. Recovery, without sequelæ, the rule.

Treatment. Very little medicine. Rest in bed. A full dose of *hydrargyri chlorid. mite*, or an *enema*, *sponging* the surface with cold water, and the administration of *saline diaphoretics* and *diuretics*. If there is great arterial excitement *aconitum* may be added. Light liquid diet is most agreeable. Cases in which the nervous symptoms are prominent do well on Fothergill's "fever mixture of the future," to wit:—

R.	Acid. hydrobromici.....	f 3 ss-j	
	Syr. simplicis.....	f 3 ss-j	
	Aquæ.....	f 3 ij-iiij.	M.
SIG.—Every four hours.			

Quininæ sulphas in tonic doses during convalescence.

CATARRHAL FEVER.

Synonyms. Influenza; epidemic catarrhal fever; contagious catarrh; epidemic bronchitis (Flint).

Definition. A continued fever, occurring generally as an *epidemic*; due to a specific cause; characterized by a catarrhal inflam-

mation of the respiratory organs, and sometimes of the digestive; always accompanied by nervous phenomena and marked *debility*.

Causes. A specific *vegetable germ*, uninfluenced by soil, climate or atmospheric changes.

Symptoms. The onset is sudden, with a *chill* followed by *fever*, the temperature reaching 101° to 103° , a *quick, compressible pulse*, and severe *shooting pains* in the eyes, frontal sinuses, joints and muscles. The chill and fever are rapidly followed by *chilliness along the spine, pain in the throat, or hoarseness, deafness, coryza, sneezing, injected, watery eye*, and a dry, irritative *laryngeal cough*, sometimes becoming *bronchial*. The *tongue* is furred, there is *anorexia*, epigastric distress, *nausea, vomiting*, and oftentimes *diarrhœa*. In some epidemics the digestive symptoms are the most prominent, when *dysentery* may occur.

The above symptoms are always associated with decided *weakness* and *debility*. Delirium is rare, but marked *hebetude* and *cutaneous hyperæsthesia* are common.

Duration. Four to seven days, with protracted convalescence. Relapses frequently occur.

Complications. Lobar or catarrhal pneumonia frequently occur, which adds to the gravity of the attack. The *cough* may outlast the disease several weeks.

Diagnosis. Isolated cases may be mistaken for a "bad cold." But when epidemic, the *sudden onset, marked general catarrh* and *decided prostration* should prevent error.

Prognosis. Recovery is the rule when it occurs in the healthy and vigorous. *Grave* when the very young, very old, or those suffering from organic disease, such as Bright's disease, fatty heart, or emphysema, are attacked.

Treatment. No specific. *Support* the system and treat indications. The *catarrh, pains* and *cough* are at least ameliorated by the following:—

R.	Quininæ sulph.....	grs. ij-iv	
	Morphinæ sulph.....	gr. $\frac{1}{12}$	
	Aquæ lauro-cerasi.....	℥j.	M.
SIG.—Every four hours.			

and the frequent inhalation of *tinct. benzoin. comp.*, ℥ss-j, *aquæ bul.* Oj.

If the *bronchial* symptoms become troublesome, use—

R.	Ammonii muriat.....	grs. x.	
	Mist. glycyrrh. comp.....	ʒ ij.	M.
	p. r. n.		

Should *pneumonia* occur treat as any ordinary attack, but *never* depress.

TYPHOID FEVER.

Synonyms. Enteric fever; gastric fever; nervous fever; enteromesenteric fever; abdominal typhus.

Definition. An acute, self-limited, *febrile* affection, due to a *special poison*; characterized by insidious prodromes; epistaxis; dull headache followed by stupor and delirium; red tongue, becoming dry, brown and cracked; abdominal tenderness, early diarrhœa and tympany; a peculiar eruption upon the abdomen; rapid prostration and slow convalescence; a *constant lesion* of Peyer's patches, the mesenteric glands and of the spleen.

Causes. Predisposing and Exciting. *Predisposing* are *Age*, to wit, young adults; and *Season*, to wit, a hot and dry autumn.

The *Exciting* cause is a *special typhoid germ*. The poison usually results from the *decomposition* of *typhoid stools*, although it has been demonstrated that the disorder may be generated under certain undetermined circumstances, *de novo*, from ordinary filth and decomposition. Klebs claims to have identified a specific "typhoid bacillus."

Pathological Anatomy. The characteristic lesions of typhoid fever consist in certain changes in the *Peyerian patches* and *solitary glands*, which may be divided into well defined stages, to wit: I. *Swelling* from proliferation of their cellular elements. II. *Sloughing and Ulceration*. III. *Cicatrization*, or in rare cases, *Perforation*.

The *Mesenteric glands* become infiltrated, enlarged and softened, but seldom ulcerate.

The *Spleen* also enlarges and softens. There is besides, *parenchymatous degeneration* or *granular changes* in all the tissues of the body.

Symptoms. *Stage of Prodromes*.—The onset is insidious, with *malaise*, vertigo, headache, disordered digestion, disturbed sleep, *epistaxis*, depression, and muscular weakness, followed by a *chill* or *chilliness*.

First Week dates from onset of the fever, when are present *increasing temperature*, *frequent pulse*, *coated tongue*, *nausea*, *diarrhœa*,

headache, and upon the *seventh day* a few reddish spots resembling flea bites appear upon the abdomen, chest or back.

Second Week, the foregoing symptoms are exaggerated; *fever* continuous, frequent and *compressible pulse*, tympanitic, *tender abdomen*, *gurgling in the right iliac fossæ*, *nocturnal delirium*, severe and constant *headache* and *stupor*, a short *cough* with distinct *bronchial râles* on auscultation, irregular muscular contractions (*subsultus tendinum*), *sordes* upon the teeth and lips, the *diarrhœa* continuing.

Third Week. *Fever* changes from continuous to remittent; the evening exacerbations continue as high as the preceding week, and all the symptoms remain about the same until near the end of the week, when a marked amelioration begins.

Fourth Week. The fever decidedly remits; almost normal in morning, the pulse becoming less frequent and more full, the tongue gradually becoming clean, the abdomen lessens in size, the *diarrhœa* ceases, the patient passing into a slow convalescence, greatly emaciated, which condition may continue for several weeks.

Analysis of Symptoms. *The temperature record of typhoid fever is a characteristic one.* The fever on the morning of the first day may be stated at 98.5° F., evening 100.5°; second morning 99.5°, evening 101.5°; third morning 100.5°, evening 102.5°; fourth morning 101.5°, evening 103.5°; fifth evening 104.5°. From that time until end of the second week, the evening temperature ranges between 103° and 105°, the morning temperature being a degree or more lower.

Diarrhœa is the principal intestinal symptom; if absent, the lesion is slight. The stools are at first dark, but early in the second week they become fluid, offensive, *ochre-yellow* in color, resembling "pea soup," and may be streaked with *blood*. They number from *three* to *fifteen* in the twenty-four hours.

Eruption is almost constant. Consists of from *five* to *twenty* small, *rose-colored spots* on the *abdomen*, *chest* or *back*, sometimes on the limbs, appearing in crops, lasting about *five days*, *disappearing on pressure* and at *death*. *Returning with relapses*. *Eruption* day from the *seventh* to the *ninth*.

Rarely spots of a delicate *blue tint*—the "*taches bleuâtres*" of French authors—are observed.

Nervous symptoms are, pronounced *headache*, early and severe, *dullness* soon following, passing into *drowsiness* and *stupor*, with

great *prostration*. *Deafness* pronounced. *Sight* impaired, in grave cases double vision. *Delirium*, low and muttering, generally pleasant in character, always present in marked cases.

Convalescence protracted. Great debility and anæmia, causing pronounced *sweating*.

Complications. *Intestinal hemorrhage* may occur from the fourteenth to the twentieth day; a sudden decline of the temperature to the norm or below precedes the passage of blood by stool. The hemorrhage is due to the erosion of a vessel during the ulcerative action.

Perforation makes the case almost hopeless. *Peritonitis* without perforation adds to the gravity, but not necessarily fatal. *Lobar pneumonia*, *hypostatic congestion* and *bronchitis* are frequent occurrences. *Albuminuria* may occur, as may *phlegmasia dolens*.

Relapses common. The symptoms all return abruptly; duration half the time of the original attack; occur at the end of the fourth or beginning of the fifth week. Not so fatal as might be expected.

Diagnosis. The *typhoid condition* differs from typhoid fever, in the absence of *diarrhœa*, the peculiar *eruption*, and the *characteristic temperature* record.

Enteritis has intestinal disorders alone.

Peritonitis, abdominal symptoms only, with constipation.

Acute miliary tuberculosis often mistaken for typhoid fever.

Meningitis lacks the intestinal symptoms and fever record.

Prognosis. A positive one cannot be made. Favorable indications are constipation, slight *diarrhœa*, low temperature and moderate delirium.

Treatment. *No specific*. Chiefly symptomatic and expectant with intelligent nursing; pure air; quiet; *disinfecting* the *urine* and the *stools*; with a liquid diet at intervals of every *two* or *three hours*.

The following remedies have advocates, claiming that they modify the course of the disease; to wit: *Hydrargyrum*, *iodum*, *acidum carbolicum*, *mineral acids*, *argentum nitras*, *ergota* and *quinina*.

The *acid treatment* consists in the administration of *acidum nitrohydrochloricum dilutum*, ℥ x-xx, well diluted, every four hours.

The present popular so-called "specific treatment" of this disease consists in the administration every second evening, until four doses are taken, of *hydrargyri chlor. mite*, gr. vij-x, which seemingly lessens the frequency of the stools in the later stages of the attack,

although slightly increasing them at the time. Also administering from the beginning of the attack—

R. Tinct. iodi..... ʒ ij
 Acid. carbol. liq..... ʒ j. M.
 SIG.—One, two or three drops in ice water, every two or three hours, after food.

To reduce the temperature, cold bath, cold pack, and cold sponging, *quininæ sulph.*, gr. xv–xx, repeated within an hour, or *antipyrin*, gr. xx, repeated.

Cases with high temperature and costive bowels are sometimes wonderfully benefited by the following:—

R. Hydrargyri chlor. mite..... gr. $\frac{1}{4}$
 Pulv. ipecacuanhæ..... gr. $\frac{1}{6}$
 Pulv. opii..... gr. $\frac{1}{6}$
 Quininæ sulph..... gr. ij.

Repeated every three or four hours.

Diarrhœa should not be checked unless it exceeds *three stools* in twenty-four hours, when may be used—

R. Bismuth subnit..... gr. xx
 Acid. carbol..... gtt. j
 Tinct. opii deodorat..... gtt. x–xv
 Mucil. acaciæ..... ʒ j
 Aquæ..... ʒ iiij. M.

SIG.—Every three or four hours.

Or—

R. Cupri sulph..... gr. $\frac{1}{8}$
 Extracti opii..... gr. $\frac{1}{4}$. M.

SIG.—In pill, every four hours.

For *Tympanites*; cold compresses or turpentine stupes to the abdomen, or R. *ol. terebinthinæ*, gtt. x, *morphinæ sulph.*, gr. $\frac{1}{20}$, in emulsion, every third hour, or *tinct. nucis vomicis*, gtt. x, *p. r. n.*

Tympany with constipation is relieved by the use of *olei terebinthinæ*, gtt. x, *olei ricini*, gtt. xv in emulsion, every three or four hours.

For *Thirst*; cooling drinks, in moderation, or pellets of ice slowly dissolved in the mouth.

Headache; cold to the head, mustard to the neck, and foot baths; if these fail to relieve, *morphina* or *atropina* hypodermatically.

Delirium; if from debility, increase the stimulants; other causes, use *morphina*.

Restlessness and coma vigil; chloral alone or with potassii bromidum, or morphina.

Debility; food every two or three hours; do not permit sleep to interfere with nourishment. Stimulants are indicated early; the best guide being the heart's action; an average amount would be $\frac{3}{4}$ vj spts. vini gallici, per diem.

The bladder should be examined at each visit.

Intestinal hemorrhage; at once morphina, gr. $\frac{1}{4}$, hypodermatically, and ext. ergotæ fld., fʒj, repeated p. r. n., or Monsell's solution, gtt. ij-iv, every two hours.

Perforation and peritonitis; at once morphina, gr. $\frac{1}{2}$, hypodermatically, followed with extractum opii, gr. j, every hour, and bold stimulation.

TYPHUS FEVER.

Synonyms. Contagious fever; ship fever; jail fever.

Definition. An acute febrile, epidemic disease; contagious and characterized by sudden invasion, profound depression of the vital powers, and a peculiar petechial eruption; favorable cases terminate by crisis in fourteen days. No lesion.

Cause. A special infecting germ, the character of which is unknown, but which is influenced by filth and overcrowding.

Pathology. Blood dark and thin, with lessened fibrin; tissues dark, soft and flabby.

Symptoms. Begins abruptly; chill followed by violent fever; temperature within a few days reaching 104° to 105° F.; a frequent, bounding pulse, soon becoming compressible; severe headache, followed by violent delirium; from the fifth to the seventh day, a coarse, red, measly eruption, with a mottling of the skin all over the body, except the face, not disappearing on pressure; constipation the rule. End of the second week, the temperature suddenly declines and the patient passes into a rapid convalescence.

Complications. Pneumonia and swollen parotid glands are common.

Diagnosis. From typhoid fever, the age, season, onset of the disease, temperature record, character of the eruption, and the intestinal symptoms.

Measles begin milder, with coryza and cough, and seldom have

such pronounced nervous phenomena, but there occurs an early eruption appearing on the face.

Prognosis. *Unfavorable indications;* high temperature, frequent pulse, early stupor, presentiment of death. *Favorable;* youth, moderate temperature and pulse, and mild nervous phenomena.

Treatment. Symptomatic. As *typhus* is distinctly contagious, *isolation* is imperative, with immediate removal and *disinfection* of the patient's excreta.

For high temperature, cold pack, cold bath, cold sponging, full doses of *quinina* or *antipyrin*.

For the *headache* and *delirium*, cold to the head, in the young and strong, a few leeches to the temple, and *chloral*, with or without the *bromides*.

For constipation, mild laxatives.

Debility; *alcohol* early and in full doses, *spiritus chloroformi* in drachm doses, whenever danger of collapse.

CEREBRO-SPINAL FEVER.

Synonyms. Epidemic cerebro-spinal meningitis; epidemic cerebro-spinal fever; spotted fever; cerebro-spinal typhus.

Definition. A malignant *epidemic* fever, characterized by painful contractions of the muscles of the neck, retraction of the head, hyperæsthesia, disorders of the special senses, and frequently an eruption of petechia or purpuric spots—a subcutaneous extravasation of blood. Lesions of cerebral and spinal membranes are found at the *post-mortem*.

Cause. A special micro-organism, of oval shape, occurring mostly in pairs and faintly tremulous, resembling those found in pneumonia and erysipelas, though hardly identical.

The disease seems to have a predilection for the young. Occurs most frequently in the winter months. *Not contagious.*

Pathological Anatomy. *Hyperæmia*, followed by an *exudation of lymph* and an *effusion of serum* upon the *membranes* of the brain and spinal cord, causing pressure.

Symptoms. Divided, according to the severity of the lesion, into three groups; to wit: the *common* form, the *fulminant* and the *abortive*.

The Common Form begins with a *chill*, excruciating *headache*,

persistent *nausea*, *vomiting*, *vertigo*, and an overwhelming sense of *weakness*. Within a few hours the muscles of the neck become *rigid* and *retracted*, with decided *pain* upon moving the head; this rigidity and retraction soon extends to the back, when *opisthotonos* occurs. The surface of the body becomes highly sensitive (*hyperæsthesia*) and *convulsions* or *delirium* occur. Intolerance of light, and in some cases *amaurosis*, more or less *deafness*, loss of sense of *smell* and *taste* soon following. The *temperature* and *pulse* records are irregular. From the *first* day to the *fifth* an *eruption* of petechiæ or purpura occurs in the majority of cases. The disease reaches its height in from three to eight days, and passes into *stupor* and *coma*, or ameliorates and passes into a protracted convalescence.

The Fulminant Form. Severe *chill*, *depression*, and in a few hours *collapse*. The patient is overcome by the poison and never reacts.

The Abortive Form consists of one or more pronounced characteristic symptoms during the course of an epidemic.

Sequelæ. Result from thickening of either the cerebral or spinal membranes; persistent *headache*, *blindness* or *deafness*, partial or complete; *epilepsy*, or different forms of *spinal palsies*.

Complications. Pneumonia; typhoid fever; pleuritis; intestinal catarrh of infants.

Diagnosis. *Typhoid fever* begins slowly, has a characteristic temperature record, *without so intense* headache, muscular rigidity, vomiting, early delirium, ending in coma and constipation.

Typhus fever has higher fever, is of longer duration, and has a peculiar measly eruption, is *not* attended with muscular rigidity and retraction, hyperæsthesia, nor disorders of the special senses.

Tubercular meningitis is *not* epidemic, has no characteristic eruption; is preceded by long prodromes, and runs a tedious course.

A congestive chill resembles the *fulminant* cases in suddenness of depression, but the latter has not the history of the former.

Inflammation of the meninges of the cord is due to exposure to cold, or syphilis, and is not attended with cerebral symptoms or an eruption.

Prognosis. Varies according to epidemic; from twenty to fifty, and even seventy-five per cent. die.

Treatment. Full doses of *opium*. Hypodermatic use of *morphine*, gr. $\frac{1}{4}$ to $\frac{1}{2}$ every two or three hours; or *extractum opii*, gr. j every hour until stage of effusion, when *quinina* in tonic doses, and

potassii iodidum are indicated. Prof. Da Costa alternates *potassii bromidum* with *opium*, especially in children. *Locally*, cold to the head and spine. A generous diet from the onset.

For *sequelæ*, *potassii iodidum*, a course of *hydrargyrum*, and flying blisters along the spinal column.

RELAPSING FEVER.

Synonyms. Famine fever; bilious typhoid fever.

Definition. An epidemic, *contagious*, febrile disease, self-limited; characterized by a febrile paroxysm, succeeded by an entire intermission, which is in turn followed by a *relapse* similar to the first seizure. No specific lesion.

Cause. A specific poison; *contagious*; acquiring the greater activity the more filthy, crowded and unhealthy the population amid which it prevails.

Pathological Anatomy. During the febrile paroxysm *only*, blood contains minute cork-screw-shaped organisms or *spiral* filaments—*spirilli*, constantly twisting and rotating.

Liver and spleen greatly swollen.

Symptoms. No *prodromes*. Onset abrupt, with fever, 102° – 104° ; frequent, rather *weak pulse*, *headache*, nausea, *vomiting*, and lancinating *pains* in limbs and muscles, marked in the calf of leg; *second day*, feeling of *fullness* and *pressure* in right and left hypochondrium, due to swollen liver and spleen; *jaundice* is frequent; *seventh day* fever ends by *crisis*; *fourteenth day* symptoms return in milder form, continuing about four days, when enters slow convalescence, much emaciated. *No eruption*. Several *relapses* may occur.

Diagnosis. *Yellow fever* has many points of resemblance, but has a shorter febrile stage, remission not so complete, vomiting late and characteristic, normal spleen, and the late appearance of yellow color.

Remittent fever begins with a decided chill, followed by fever and sweats, and not the progressive rise of temperature till the fifth or seventh day.

Prognosis. Recovery the rule, but protracted, and decided *emaciation* results.

Treatment. *Expectant*. Act on secretions; nourish patient and meet urgent symptoms. For fever, antipyretic doses of *quinina* which,

however, has no power to prevent the relapses; for pain, hypodermatic injections of *morphina*; nausea and vomiting, *acidum carbolicum* or *cerii oxalas*; during remission, *ferrum* and *quinina* in tonic doses.

PERIODICAL FEVERS.

These affections are characterized by the distinct periodicity of the phenomena, having intervals during which the patient is wholly or nearly free from fever.

INTERMITTENT FEVER.

Synonyms. Ague; chills and fever; malarial fever.

Definition. A *paroxysmal* fever, the phenomena observing a regular succession; characterized by a cold, a hot and a sweating stage, followed by an interval of complete *intermission* or apyrexia, varying in length, according to the variety of the attack.

Cause. Malaria. *Bacillus Malaria*?

Pathological Anatomy. Blood dark, from the formation of pigment (*Melanæmia*). Spleen swollen (*Ague cake*). Liver engorged and swollen.

Varieties. *Quotidian* when a daily paroxysm; *tertian* when every other day; *quartan* when it occurs first and fourth days; *octan* when weekly; *duplicated quotidian* when two paroxysms daily; *duplicated tertian*, two every second day; *double tertian*, daily paroxysm, but more severe every second day. *Dumb ague*, or masked ague, has irregularity of the characteristic phenomena.

Symptoms. Each paroxysm has three stages, to wit: *cold*, *hot* and *sweating*.

Cold stage begins with *prodromes*, to wit: lassitude, yawning, headache and nausea, followed by a *chill*; the teeth chatter, skin pale, nails and lips blue, the surface rough and pale, the so-called *goose-skin* or *cutis anserina*, nausea and great thirst, while the thermometer in the axilla or mouth shows a decided *rise of temperature*, 102° F.—104°; these phenomena continuing from one-half to an hour.

Hot stage begins gradually, by the shivering ceasing, the surface becoming *hot* and flushed, the temperature rising to 106° F., or more, *pulse full*, *headache*, *nausea*, *intense thirst*, dry, flushed, swollen skin, *scanty urine* and other phenomena of *pyrexia*, continuing from one to eight or ten hours.

Sweating stage begins gradually, first appearing on the *forehead*, then spreading over the entire surface; the *fever lessens*, the temperature rapidly falling to 99° or 98° , pulse less full, headache lessens, and a general feeling of comfort, sleep often following; duration from one to four hours, when the *intermission* occurs, the patient apparently well, except a feeling of general debility.

The occurrence of the next paroxysm depends upon the variety of the attack.

The paroxysm may be ushered in by a decided pain in one or more nerves, instead of the cold stage, to wit: "*brow ague*."

Diagnosis. No difficulty when the characteristic *chill*, *fever*, and *sweats* occur.

Hectic fever. Distinguished by its irregularity, and occurring secondary to an organic disease.

Pyæmia produced by other causes than malaria.

Nervous chills show an *absence* of the temperature rise.

Prognosis. Recovery the rule. Without treatment many cases end favorably after several paroxysms; others passing into the *chronic* form or *malarial cachexiæ*.

Treatment. *Cold stage* can be averted and the other stages greatly modified by a hypodermatic injection of either *morphinæ sulph.*, gr. $\frac{1}{8}$ – $\frac{1}{4}$, or *pilocarpinæ hydrochloras*, gr. $\frac{1}{8}$, or *chloroformi spts.*, fʒj, by the stomach. *Hot stage*, cool drinks and cold sponging. *Sweating stage*, when excessive, sponging with *alumen* and hot water.

Intermission; at once a brisk purgative, followed by *cinchona* in some form, the most efficient being *quininæ sulph.*, gr. xx–xxiv, in solution or freshly-made pills, in one or two doses, *three to five hours before* the expected paroxysm. Many substitutes are lauded to replace the salts of cinchona bark, but without avail.

After the *paroxysms* are broken up, use *liq. potassii arsenit.*, gtt. v–x, *t. d.*, for a long time, or *tinct. ferri. chloridi*, gtt. xx, every four hours, or a combination like the following:—

R.	Ferri reducti		
	Quininæ sulph	aa.....	gr. xlvijj
	Acidi arseniosi.....		gr. j
	Ol. pip. nigr		gtt. xv.

Ft. pil. No. xxiv.

SIG.—One pill after meals, continued for one month, at least.

Relapses being common, *quinina* should be given on the *second* or *third* day, *fourth* to the *sixth*, *twelfth* to the *fourteenth*, and *nineteenth* to the *twenty-first* days.

REMITTENT FEVER.

Synonyms. Bilious fever; bilious remittent fever; marsh fever; typho-malarial fever?

Definition. A *paroxysmal* fever, with exacerbations and *remissions*; characterized by a moderate cold stage (which does not recur with each paroxysm); an intense hot stage, with violent headache and gastric irritability; and an almost imperceptible sweating stage, which is frequently wanting.

Cause. Malaria, aided by high temperature.

Pathological Anatomy. Blood dark (*Melanæmia*); spleen enlarged, soft, filled with blood, and of an *olive* color; liver congested and swollen, and of a *bronze* hue; the brain hyperæmic and olive-colored; gastro-intestinal canal markedly hyperæmic.

Symptoms. *Cold stage*; moderate *chill*, the temperature rising 1° to 2°, *oppression at the epigastrium*, slight *headache*, and pains throughout the body.

Hot stage; persistent *vomiting*, furred tongue, *full pulse*, rising to 100 or 120, flushed face, *injected eye*, violent *headache*, *pains* in limbs and loins, hurried *respiration*, the *temperature* rising to 104° F., or 106°. The bowels costive, *stools tarry* and offensive, and the *surface* becoming *yellow*. *Delirium* occurs when the temperature is very high.

Sweating stage; after six to twenty-four hours, the above symptoms abate, and *slight sweating* occurs; the *pulse*, *headache* and *vomiting* subside, and the *temperature* falls to 100° F., or 99°.

This is the *remission*.

After some *two* to *eight* or *twelve* hours the symptoms of the hot stage return, generally *minus* the *chill*, and this is termed the *exacerbation*, which is in turn again followed by the *remission*.

Duration. From seven to fourteen days, the average. Frequently the fever *ceases to remit*, and instead, becomes *continuous*, the symptoms resembling, if they are not identical with, the *typhoid state*, whence the term *typho-malarial fever*, or *malario-typhoid fever*.

Sequelæ. The *malarial cachexia* results when the poison has not been eliminated.

Persistent headache and vertigo are the results of the intense meningeal hyperæmia that sometimes occurs.

Diagnosis. In *intermittent fever* each paroxysm begins with a chill, while the chill seldom recurs in remittent fever; a distinct *intermission* follows each paroxysm of the intermittent form, while a *remission* occurs in remittent, the thermometer showing that the fever does not wholly disappear; during the *intermission* the patient is apparently well; such is not the case in the remission of remittent fever.

Typhoid fever is mistaken for remittent fever, but the absence of the characteristic temperature record, diarrhœa, eruption, tympanites, deafness and severe prostration, should prevent the error.

Prognosis. Uncomplicated cases are favorable.

Treatment. *Quininæ sulph.*, gr. xvj-xx per diem, is the remedy. Better administered during the *remission*, if possible. If an irritable stomach prevents its administration by the mouth, use it by the *hypodermatic method* or in a *suppository*. During the *hot stage*, cool sponging, cold to the head, and if a tendency to cerebral congestion, dry or wet cups to the nape of the neck and—

℞.	Tinct. aconit. rad.....	gtt. j-ij
	Liq. potas. citrat.....	℥ ij
	Liq. ammon. acetat.....	℥ ij.

Every two hours.

Purgation during the remission, with—

℞.	Hydrarg. chlor. mitis.....	gr. v
	Sodii bicarb	gr. x
	Pulv. aromat.....	gr. v.

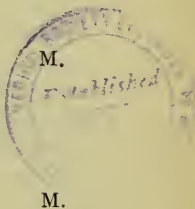
In pulv. p. r. n.

The same precautions are essential after the paroxysms are broken up, to prevent their return on the septenary periods, that were recommended for intermittent fever.

PERNICIOUS FEVER.

Synonyms. Congestive fever; malignant intermittent fever; malignant remittent fever.

Definition. A malignant, destructive, malarial fever, which may be of the intermittent or remittent form; characterized by *intense*



congestion of one or more internal organs, *together* with dangerous perversion of the functions of innervation.

Cause. A high degree of malarial poison.

Varieties. *Gastro-enteric; thoracic; cerebral; hemorrhagic; algid.*

Symptoms. Any of these varieties may begin either as in *intermittent* or *remittent* fever; again, the *first paroxysm* is rarely pernicious, but appears as the ordinary malarial attack.

The *gastro-enteric* variety has as distinctive features, *intense nausea* and *vomiting*, *purging* of thin discharges mixed with blood, *tenesmus*, *burning heat* in stomach, *intense thirst*, frequent, weak *pulse*, face, hands and feet *cold*, with *shrunk features*, and intense depression of all the vital forces. This condition continues from half an hour to several hours, when either an inter- or remission occurs.

Thoracic variety often combined with the one just described. Its characteristic features are due to overwhelming congestion of the lungs, such as *violent dyspnœa*, *gasping* for air, fifty to sixty respirations per minute, *oppressed cough* with slight amount of blood-streaked sputa, *frequent, weak pulse*, *cold surface*, and terror-stricken features. Duration same as the above.

Cerebral variety, due to intense congestion of the brain; sometimes effusion of serum into the ventricles, or even rupture of small blood vessels. Characterized by *violent delirium*, followed by *stupor* and *coma*, *slow, full pulse*, the surface either *flushed* or *livid*. Cases may either resemble *apoplexy*—comatose variety, or *acute meningitis*—delirious variety. Duration same as the other forms.

Hemorrhagic variety, or the yellow disease, as it has been termed, begins as an ordinary inter- or remittent fever, soon followed by signs of *internal congestion*, to wit: *nausea, vomiting, dyspnœa*, severe *pains* over *liver* and *kidney*, continuing for a few hours, when the *surface* suddenly turns *yellow* and *bloody urine* is voided, after which an inter- or remission and marked abatement occur, to be sooner or later followed by a second paroxysm, which is more severe, with additional signs of *cerebral congestion*. Blood may also escape from other parts than the kidneys.

Algid variety is characterized by intense *coldness* of the surface, while the rectal temperature ranges from 104° to 107° F. The attack begins with a *chill* which is soon followed by *fever* of variable duration, when the body becomes *cold*, the axillary temperature falling to

90°, 88° or even 85° F., a *cold sweat* covers the surface, the tongue is *white, moist and cold*, the *breath is icy*, the *voice* feeble and indistinct, the *pulse slow, feeble* and often *absent* at the wrist, and with all these symptoms, the patient complains of a sensation of *burning and intense thirst*. The *mind is clear*, but the countenance is *death-like*.

Duration. Pernicious fever, in any of its forms, may continue from a few hours until one, two or three days. Recovery is rare after a *second*, almost never after a *third*, paroxysm.

Diagnosis. *Yellow fever* is most apt to be confounded with the *hemorrhagic* variety, and as they both occur in the same localities, the diagnosis is difficult; the early *yellowness* of the surface, with *hæmaturia*, and the absence of the *black vomit*, are the chief points of distinction.

The *cerebral* variety may be mistaken for *cerebral apoplexy*, *meningitis* and *uræmic convulsions*. Nor is it always an easy matter to differentiate between these conditions.

The *gastro-enteric* variety may be mistaken for the early stage and the *algid* variety for the latter stage of *cholera*, but the prevalence of the latter should be of material aid in deciding the question.

Prognosis. In all varieties the result is unfavorable, unless it can be controlled prior to the *second* paroxysm. Cases in which an *intermission* occurs are better controlled than where a remission follows. The mortality is *one in eight* from all forms of treatment.

Treatment. The first indication in all varieties is to bring about *reaction*. If the *cold stage*, heat to the surface, with stimulating lotions; if the *hot stage*, cold to the surface and the hypodermatic injection of *morphina*, gr. $\frac{1}{4}$, at once. After *reaction*, *quininæ sulph.*, not less than gr. xl, repeated p. r. n.; administer by stomach, rectum, or better still, by hypodermatic injection. Dr. Bartholow pronounces the following one of the best formulæ for the hypodermatic use of quina:—

R. Quininæ disulph.....	gr. l	
Acid. sulph. dil.....	m̄c	
Aquæ font.....	ʒj	
Acid. carbol. liq.....	m̄v.	M.

The following formula, known as "Warburg's Tincture," has during the last few years gained considerable reputation in the various forms of malarial fevers:—

R. Rad. rhei, P. aloe soc, and Rad. angelica officinalis.....āā.....	3 iv
Rad. helenii, Crocus Hispan., Sem. fœniculi, and Cretæ preparat.....āā.....	3 ij
Rad. gentian, Rad. zedoar, P. cubeb, G. myrrh, G. camphor, and Boletus Laricis.....āā.....	3 j
Confect. damocratis*.....	3 iv
Quininæ sulph.....	3 lxxxij
Spt. vini rect.....	Oxx
Aquæ puræ.....	Oxij.

Macerate in a water bath twelve hours, express and filter.

Each half ounce contains quininæ sulph., gr. vijss. If the stomach is too irritable to retain the tincture, the tincture may be evaporated to dryness and administered in *capsules*, each containing the equivalent of either one or two drachms.

For the *gastro-enteric* variety, Prof. Da Costa suggests—

R. Morph. sulph.....	gr. $\frac{1}{2}$	
Pulv. camph.....	gr. j	
Mass. hydrarg.....	gr. ij	
Pulv. capsici.....	gr. ss.	M.

In pills every half hour until the character of the stools change.

For the *thoracic* variety, dry or wet cups and *ammonii carbonas*.

For the *cerebral* variety, venesection, or cups or leeches to the neck, cold to the head, prompt purgation, and acting on the kidneys and skin.

* Formula of *Confectio damocratis* :—

Cinnamon.....	xiv Gm
Myrrh.....	xj Gm
White agaric, Spikenard, Ginger, Spanish saffron, Treacle, Mustard seed, Frankincense, and Chian turpentine.....āā.....	x Gm
Camel's hay, Costus arabacus, Zeodary, Indian leaf, Mace, French lavender, Long pepper, Seeds of harwort, Juice of rape cistus, Strained storax, Opponex, Strained galbanum, Balsam of Gilead, Oil of nutmeg, Russian castor.....āā.....	vij Gm
Water germunder, Balsam tree fruit, Cubeb, White pepper, Seeds of carrot of Crete, Poley mont, Strained bdellium.....āā.....	vij Gm
Gentian root. Celtic hard, Leaves of Dittany of Crete, Red rose, seeds of Macedonium, Parsley, Sweet fennel seed, Seeds of lesser cardamon, Gum arabic, Opium.....āā.....	v Gm
Sweet flag, Wild valerian, Anise seed, Sagaper-num.....āā.....	ij Gm
Spigrlul, St. John's wort, Juice of acacia, Catechu, Dried bellies of skunk.....āā.....	ijss Gm
Clarified honey.....	cmxv Gm.

The roots to be finely powdered and the whole mixed thoroughly.

For the *algid* variety *warmth* to the surface, hypodermatic use of *morphina* and the free use of *ammonii carbonas* and *alcoholic stimulants*.

For the *hemorrhagic* variety, purgatives, *morphina* hypodermatically, and either *acid. sulph. dil.*, *acid gallic*, *Monsell's solution*, or *terebinthina*, for the hemorrhages.

The following is highly spoken of for hemorrhages:—

R.	Ext. ergotæ, fld.....	℥ ss	
	Acid. sulph., dil.....	f ℥ jss	
	Acid gallic.....	℥ j	
	Syr. zingib.....	f ℥ iij	
	Aquæ q. s.....ad.....	℥ ij.	M.

SIG.—Dessertspoonful every 4 hours, well diluted.

After the paroxysms are controlled, a long course of *ferrum*, with *quinina* on the septenary days.

YELLOW FEVER.

Synonyms. Bilious malignant fever; typhus icterode Mediterranean fever; sailors' fever.

Definition. An acute, infectious, paroxysmal disease, of *three stages*, to wit: the *febrile*, the *remission*, and the *collapse*; characterized by violent fever, yellowness of the surface, and "black or coffee-ground vomit." Tendency fatal; one attack confers immunity from a second.

Cause. A specific poison, existing only with a high temperature and destroyed by frost. *Not due to the malarial poison.*

Pathological Anatomy. *Skin* lemon or greenish-yellow color, due to dissolution of the red blood corpuscles; *heart* softened by granular degeneration; *stomach*, veins deeply engorged, the mucous membrane softened, and containing more or less "coffee-ground" matter, which consists of blood corpuscles deprived of their hæmoglobin, white corpuscles, epithelial cells and *débris*. *Intestines* much the same as the stomach; *liver*, yellow color and a fatty degeneration of the hepatic cells; *kidneys*, granular degeneration of the epithelium of the tubules.

Symptoms. *First stage, the febrile*, beginning either with the prodromata of *malaise*, headache and anorexia, or suddenly with a *chill*, high *fever*, in a few hours reaching 104° F., high *pulse*, *brilliant*

eye, flushed countenance, coated tongue, *irritability* of the stomach, and severe *neuralgic pains* in the head, limbs, epigastrium, back and large joints. The patients are restless and anxious. In severe attacks *delirium* is frequent. *Albumen* in the urine, and a peculiar and characteristic odor is emitted from the patient. Duration of the first stage from thirty-six hours to three or four days.

Second stage, the remission, when the temperature declines to 100° or 101° F., and all the distressing symptoms abate or subside and, with some critical evacuation, convalescence occurs, or, more commonly, after from one to four days, the

Third stage, the stage of collapse, is ushered in by a return of all the symptoms of the first stage in an exaggerated form, followed by *yellowness* of the skin, passing to a deep mahogany color, *black vomit* and *hemorrhages* from other parts, *feeble pulse*, *cold surface*, *irregular respiration*, and *death* from *exhaustion*, the mind remaining clear until the end.

The above symptoms represent a *sthenic* case ; other varieties are the *algid*, *hemorrhagic* and *typhus*.

Duration. Depends upon the variety ; from a few hours to a few days. Rarely continues longer than one week.

Diagnosis. *Pernicious fever*, hemorrhagic variety, is apt to be mistaken for yellow fever. Yellow fever is a disease of *one* paroxysm, and *one* remission, epidemic, with albuminuria and black vomit. Pernicious fever has more than one paroxysm, not epidemic, rarely black vomit or albumen in urine.

Prognosis. One in four perish. Short cases unfavorable, as are the hemorrhagic and algid varieties.

Treatment. *No specific* ; a "self-limited" disease. The indications are to treat the symptoms and nourish the patient. Good nursing, ventilation, *early emesis* and *purgation*, with *diaphoretics* and *diuretics*, are apparently beneficial. Large doses of *quinina*, early in the attack, for high temperature ; for the irritable stomach, *ice* slowly dissolved in the mouth and *acidum carbolicum*, gr. $\frac{1}{4}$ in *aqua menthae pip.*, every two hours, alternated with *liquor calcis* and milk, each an ounce, or—

R. Hydrargyri chlor. mite..... gr. $\frac{1}{12}$
Morphinæ sulph..... gr. $\frac{1}{24}$.

Every two hours until nausea controlled.

For the black vomit and hemorrhages, either *liquor ferri subsulphatis* or *plumbi acetas*. The pains, restlessness or delirium are best controlled by the hypodermatic use of *morphina* or *atropina*. Free stimulation from the onset is essential.

ERUPTIVE FEVERS.

As a group, the eruptive or exanthematous fevers have many features in common. All have a period of incubation, are characterized by a fever of more or less intensity preceding the eruption, by an eruption which is peculiar to each, occurring most commonly in childhood, rarely attacking the same person twice, very prone to occasion serious sequelæ, and are contagious. Their origin is as yet undetermined.

SCARLET FEVER.

Synonym. Scarlatina.

Definition. An acute, self-limited, *infectious* disease; characterized by high temperature, rapid pulse, a diffused scarlet eruption, terminating with desquamation, inflammation of the throat, and frequently more or less grave nervous phenomena. Serious sequelæ frequently follow an attack. One attack confers immunity from the disease.

Pathological Anatomy. An acute inflammation of the skin, with exudation—a true *Dermatitis*. A *granular* change in all the glandular structures, most marked in the Peyerian glands, although also occurring in the stomach and kidneys.

Cause. A specific poison, maintaining its vitality for a long time. Eminently *contagious*, the contagion residing chiefly in the desquamated epidermis. Klebs' micrococci, the "*monas scarlatinosa*," may prove to be the poison. *Incubation* short, one to seven days.

Varieties. *Scarlatina simplex*, *scarlatina anginosa* and *scarlatina maligna*.

Symptoms. A mild case is a very trivial affection, but in its severest form there are few affections more malignant.

Onset sudden with a decided *chill* and *vomiting* (in infants, convulsions), followed by *high fever*, soon reaching 105°; a *rapid pulse*, 110 to 140 being common. At the end of twenty-four hours a *bright scarlet rash* appears on the neck and chest, spreading over the entire

body within a few hours; the eruption is not raised, there is no intervening healthy skin, and scattered irregularly are points of a darker hue. With the appearance of the eruption occurs *burning heat of surface, burning in the throat* and *difficulty in deglutition* are complained of, the throat on inspection presenting the appearance of a *catarrhal* inflammation. *Tongue* at first furred, later, red, with prominent papillæ—the “strawberry tongue.” There also occurs *headache, great restlessness*, and in severe cases *delirium*. *Diarrhœa* quite common.

On the fourth or fifth day the fever declines by *lysis*, the eruption fading, and on the sixth or eighth day *desquamation* begins, continuing for a week or more, the *convalescence* being slow, the patient *emaciated* and *pale*.

Scarlatina anginosa are cases with great inflammation and swelling of the *throat, tonsils* and neighboring *glands*, the swollen glands pressing upon the surrounding parts, causing *difficulty of breathing and of deglutition*.

Scarlatina maligna are cases with decided *nervous* phenomena, to wit: *convulsions, delirium* and *muscular twitching*, the *temperature* reaching 107° to 110°, the *pulse rapid, feeble* and *irregular*, the *eruption* delayed, of a purplish color, and in *patches*.

Sequelæ. Chronic sore throat; conjunctivitis; otorrhœa; chronic diarrhœa; subacute rheumatism; chorea; endocarditis; acute Bright's disease; cutaneous dropsy.

Diagnosis. A typical case should cause no difficulty; the high fever, rapid pulse, sore throat, and early scarlet eruption, followed by desquamation, should leave no doubt.

Measles; the above symptoms are absent, and *catarrhal* symptoms present.

Smallpox; eruption on the third day in spots, changing to pustules with secondary fever.

Dengue or break-bone fever; absence of the above typical symptoms, and presence of severe *pains in the bones*.

Diphtheria; gradual invasion, great prostration, and no eruption.

Meningitis may be suspected from the symptoms of *scarlatina maligna*; the epidemic influence, eruption, and rapid pulse, are points of difference.

Prognosis. Depends upon the character of the attack. Never can be positive of the result. Mortality ranges from ten to twenty-five per cent.

Treatment. As with other eruptive fevers so with scarlatina; there are no specific remedies by means of which it can be arrested or controlled. Symptomatic treatment judiciously applied, however, may afford relief and diminish the fatality.

The indications are for good ventilation, disinfection, cooling drinks, action upon the skin and light nourishment.

For cases with high *fever* and *rapidity of pulse*, *aconitum*, *digitalis*, *quinina* or *antipyrine*, with cool sponging, cold bath, douche or pack.

If the surface be pale, the circulation feeble, and the eruption tardy in appearing, benefit will follow the administration of *tinctura belladonnæ*, gtt. j-x, according to age.

For *scarlatina anginosa*, internal use of *tinctura ferri chloridi* and *potassii chloratis*, and *stimulants*. Externally, ice or cold compresses, unless they cause chilliness; if so, heat. Astringent gargles and small pellets of ice dissolved in the mouth are of use.

Dr. J. L. Smith warmly lauds the following mixture for cases with decided *throat* symptoms:—

R.	Acid boracic.....	℥ ss	
	Potass. chlor.....	℥ ij	
	Tinct. ferri chlor.....	f ℥ ij	
	Glycerinæ,		
	Syrupi.....āā.....	f ℥ j	
	Aquæ.....	f ℥ ij.	M.

SIG.—One tablespoonful every two hours, to a child of five years.

For *scarlatina maligna*, in addition to *ferrum* and *quinina*, the chief reliance must be on *alcoholic stimulants*, guiding the amount by their effects. In children wine-whey, milk-punch, and egg-nog are eligible for the administration of stimulants and nourishment.

For the *pruritus*, the local use of *oils* or *fats* in some form affords great relief, the following formula being most efficient, as well as a disinfectant:—

R.	Acidi carbolic.....	gr. x-xxx	
	Vaseline	℥ ij.	M.

SIG.—To be applied over the entire surface after sponging or bath.

Convulsions result from the high grade of fever, or are the result of uræmia. If due to the former cause, the cold bath and cold affusion are the indications; if the latter cause, the inhalation of *chloroformum* is indicated.

For the *headache, disturbance of vision and coma*, the result of uræmia, free purgation and diaphoresis are to be employed.

Prof. Da Costa advocates the administration of *ammonii carbonas*, in small doses at frequent intervals, to prevent the liability of heart-clot, and for its salutary influence over the disease.

It is claimed that a characteristic micrococci is found in the blood, and that, consequently, the disease can be favorably influenced by *acidum carbolicum*, *thymol* or *acidum boricum*.

For the various *sequelæ*, the treatment is the same as if they occurred primarily, *plus* tonics.

The disease being *infectious*, every means should be taken to prevent its spread, to wit: isolation, cleanliness, disinfection and fumigation.

Small doses of *quinina*, in those exposed, is said to prevent or modify the severity of an attack, but no true prophylactic is known.

MEASLES.

Synonyms. Morbilli; rubeola.

Definition. An acute *epidemic* and *contagious* disease; characterized by catarrhal symptoms, referable to the naso-broncho-pulmonary mucous membrane, fever, and a crimson eruption which terminates by desquamation.

Cause. A specific poison, with a special susceptibility for childhood. Contagious by contact, and has been communicated by inoculation. One attack, as a rule, protects from a second. *Incubation*, ten days.

Pathological Anatomy. There are no special anatomical characters exclusive of the eruption which is considered among the symptoms of the disease.

Symptoms. Onset gradual, irregular *chills, fever*, the temperature rising to 101° or 102°, *muscular soreness, headache*, and intense *nasal, pharyngeal* and *laryngeal catarrh*; on the evening of the *second day* a *decided remission* takes place in the *fever*, the catarrh continuing; on the *fourth day* occurs an eruption of a *crimson* color, on the face, soon spreading over the body, in the form of dots, slightly elevated, which coalesce into irregular circles or *crescents*, and with the appearance of the eruption the *fever returns*, the catarrh is aggravated, but the character of the *discharge*, instead of being clear and

watery, becomes *turbid, thick* and *yellowish*, and extends to the *bronchial* mucous membrane. About the *ninth day* (the fourth of the eruption), the eruption fades, the symptoms abate, and slight desquamation occurs. Some cough and catarrh may remain for a long period.

Black measles, sometimes called *hemorrhagic rubeola*, or camp measles is a variety occurring in camps and jails, in which occur dangerous chest symptoms, and black spots or petechiæ from deteriorated blood, and severe prostration.

Rather common complications are *lobar* and *catarrhal pneumonia*.

Sequelæ. In those of *strumous diathesis*, scrofula or phthisis may develop.

Diagnosis. A typical case begins gradually, with chilliness, nasal catarrh, watery eye, and fever, which decline before the eruption, rising afterwards, the eruption crescentic in shape, and of a crimson color.

Scarlet fever; absence of catarrh, and earlier appearance and different character of the eruption with severe fever and rapid pulse.

Prognosis. As a rule, a perfect recovery. If phthisis develop, the prognosis is bad. Black measles, the majority perish.

Treatment. *No specific.* Mild cases require no medicine, simply regulating the diet and bowels, and cool sponging; the indications are to render the patient as comfortable as possible, the disease pursuing a favorable course without therapeutical interference.

If the febrile reaction is high, use—

R.	Liq. potass. citrat.....	℥j	
	Spts. æther. nitrosi	gtt. x-xv	
	Tinct. aconit. rad.....	gtt. ss-j.	M.

Every two hours, soon controls it.

For *pruritus* of the *eruption*, the local use of *oils* and *fats*. For *catarrhal symptoms*, inunction of the nose, neck and chest with *camphorated oil* and small doses of *pulv. ipecac et opii*, at bedtime; if the catarrh extends to the bronchial mucous membrane, *expectorants*.

During convalescence, for the strumous, protect from exposure, and *ol. morrhue* with *syr. ferri iodidi*. For *black measles*, bold stimulation, with *ferrum* and *quinina*.

RÖTHELN.

Synonyms. Epidemic roseola; German measles; French measles; false measles.

Definition. An acute, self-limited disease; characterized by mild fever, suffused eyes, cough and sore throat, enlargement of the lymphatic glands of the neck, and a rose-colored eruption, in patches of irregular size and shape, appearing on the first day.

Cause. Propagated by infection. That a peculiar germ exists is probable, but thus far it has not been isolated. *Incubation* from one to three weeks.

Symptoms. Onset sudden, with *mild fever, suffused eyes*, with little or no coryza, *sore throat*, and *enlargement of the cervical glands*, not limited to those about the angle of the jaw, as in scarlatina. Any time from the *first* to the *fourth* day appear *rose-colored spots*, size of a pin head, slightly elevated, which coalescing, form irregular shaped and sized patches, with intervening healthy skin, fading on the upper part of the body while just appearing on the lower. Symptoms all terminate within a week by *lysis*, the patient being none the worse for the attack.

Diagnosis. From *scarlet fever*, by absence of the high fever, the rapid pulse, the color and character of the eruption and the sequelæ.

From *measles*, by absence of intense catarrhal symptoms, the late appearance of eruption and not of a crescentic shape.

Prognosis. Most favorable.

Treatment. Mild laxatives and restricted diet. If *fever* high, saline mixture. For *itching* of skin, sponging with vinegar and water.

SMALLPOX.

Synonym. Variola.

Definition. An acute, epidemic and *contagious* disease; characterized by severe lumbar pains, vomiting, and an initial fever, lasting from three to four days, followed by an eruption, at first *papular*, then *vesicular* and afterwards *pustular*; the development of the pustule being accompanied by a *secondary fever*, during the presence of which grave complications are prone to occur.

Causes. A specific poison whose nature is unknown, maintaining its contagious vitality for a long period. There is no period, from the initial fever to the final desquamation, when the disease is not con-

tagious, although the stage of suppuration is the most virulent. One attack, as a rule, protects from a second. *Vaccination* has a positive protective influence from the disease, an extensive observation having fully proven that in proportion to the efficiency of vaccination is the rarity and variety of variola. *Incubation*, fourteen to sixteen days.

Pathological Anatomy. A granular and fatty degeneration occurs in the liver, spleen, kidneys and heart. The *pustules* are found in the larynx, trachea, bronchial tubes, and on the pleura.

Varieties. Discrete; confluent; malignant; varioloid or modified smallpox.

Symptoms. *Discrete form.* Onset sudden, with a *violent chill*, *vomiting*, and agonizing *pains in the back*, shooting down the limbs; *fever*, in short time, rising to 103° or 104° F.; *full, strong and rapid pulse*, ranging from 100 to 130; the *face red, eyes injected, intense headache and sleeplessness*; *delirium and convulsions* occur at times. During the *third day* the characteristic eruption makes its appearance, first on the forehead and lips, consisting of *coarse red spots*; with the appearance of the eruption all the marked symptoms of the fever abate, the patient feeling quite comfortable. On the *fifth day* of the disease the spots become *papules*; on the *sixth day*, transformed into *vesicles*, which are soon *umbilicated*; on the *eighth day* the *vesicles* change to *pustules*; on the *ninth day* the pustules are entirely purulent, and each surrounded with a broad red band—the *halo* or *areola*, the face becoming swollen, and the features distorted; on the *eleventh day*, pus oozes from the pustules, and drying, forms the *scab* or *crust*, which, on the *seventeenth to twenty-first day* drops off, leaving a red, glistening depression or *pit*, soon changing into a white cicatrix. With the formation of the pustules (*eighth day*) severe *rigors* and *fever* set in, and a characteristic *odor* is emitted, all the original symptoms returning; this *secondary fever* is the most critical period of the disease, and is generally attended with *violent delirium*. In favorable cases the secondary fever subsides after three or four days, and *convalescence* is established.

Confluent smallpox differs from the *discrete* in being more severe, the *eruption* appearing during the *second day*, the *pustules* coalescing into large patches, causing great distortion of the features.

Malignant smallpox is characterized by the intensity and irregularity of the symptoms, death resulting before the characteristic erup-

tion appears, by convulsions or coma. In these cases *hemorrhages* are frequent and *petechiæ* are observed.

Varioloid, or modified smallpox, is the form modified by previous vaccination or by a former attack of smallpox. Its course is shorter and milder than the other forms, the eruption appearing a day later, and is *not attended with secondary fever*.

Complications. During the course of the *secondary fever* there is a great tendency to grave inflammations, to wit: *pleuritis*, *pneumonitis* and *dysentery*. During *convalescence*, *boils* and *abscesses* on the skin are frequent.

Diagnosis. Cannot be confounded with any other disease if have typical symptoms, to wit: chill, vomiting, pains in back and legs, high fever and pulse, all declining on *third day*, when the eruption appears, first spots, then papules, then vesicles, finally pustules, drying and forming crusts, and with the marked secondary fever.

Prognosis. Depends upon the *variety* of the attack, the *age* of the patient, and whether *vaccinated* or not. *Discrete* mortality four per cent. ; *confluent*, fifty per cent. ; *malignant*, all perish ; under *five years* and over *forty years*, fifty per cent.

Treatment. *No specific*; the disease will run its course under any plan of medication, although cases seem to do better if *acidum carbolicum* or *thymol* are used.

For the *initial fever* and the *full pulse*—

R.	Tinct. aconit. rad.....	gtt. j-ij	
	Spts. æther. nitrosi.....	℥ ss	
	Liq. ammonii acetat.....	f ℥ ij	
	Aquæ.....	f ℥ iss.	M.

Every hour or two.

Or—

R.	Acid. salicyl.....	gr. x	
	Spts. vini rect.....	gtt. xx	
	Elix. simp.....	℥ ss.	M.

Every hour or two.

If *headache* and *backache* are intense, hypodermatic injections of *morphina*, or *ice bag* to the head and back.

For *sleeplessness* and *restlessness* or *early delirium* full doses of *potassii bromidum*.

For *secondary fever* the best remedy is *quinina*, gr. v, every three

hours, and for *cerebral excitement* of this period, either full doses of *potassii bromidum*, by stomach, or the following by rectum :—

R. Chloral.....	gr. xv-xx	
Mucil. acacia.....	f℥ ij	
Aquæ.....	f℥ ij.	M.

p. r. n.

The secondary fever being pyæmic in character, the depression should be anticipated by large doses of *tinct. ferri chloridi* and judicious *stimulation*, brandy in tablespoonful doses the most efficient.

From the onset, milk, eggs, animal broth, oysters and beef juice should be administered every *three hours*. *Ice* is always grateful and should be given freely, and if pustules appear in the mouth, ice should be held in the mouth as long as possible, and washes of *potassii chloras* or *acidum carbolicum* employed.

The disease being contagious, *isolation, ventilation, cleanliness* and *disinfection* are imperative.

To prevent *pitting* keep patient in a *dark room*, well ventilated. *Masks* of some unctuous material, thoroughly applied, to exclude the air, have a beneficial effect, a good formula being, R. *Ung. hydrarg., pulv. marantæ, equal parts, or glycerit. amylii*, painted over eruption, changing to *tinct. iodi* as vesicles are about to develop. Success is claimed by a number of observers from the use of *collodium* applied once or twice daily. *Cold water* dressings constantly to face and hands are beneficial, besides allaying heat, pain and swelling. *Hot water* can be used if more grateful.

VACCINATION.

Definition. Inoculation with the matter of *vaccinia* or cow-pox—*bovine virus*. The person *properly* vaccinated is, as a rule, protected from an attack of smallpox, and especially from a severe or fatal attack.

Vaccination should be performed at least *twice* in every individual, to wit: during *infancy* and at *puberty*; and it is safer to have it again performed if special exposure be liable to occur.

In practising vaccination the skin should be rapidly scraped until the true skin is reached and is ready to bleed, the lymph being then brushed over the abraded surface; or, instead, making three or four horizontal and transverse cuts, about four lines long, and rub the

virus over them ; a little blood, but not much bleeding, should be caused.

Symptoms. If the vaccination "takes," on the *third day* a *papule* appears ; on the *sixth day* a *vesicle* has formed, with a central depression ; on the *eighth day* a *pustule*, fully formed and distended with lymph, with a reddish areola, which becomes very wide. The areola begins to fade on the *tenth day*, the pustule begins to dry, and by the *fourteenth day* a *brown mahogany scab* or *crust* has formed, which is detached about the *twenty-third day*. The *cicatrix* is circular, depressed, radiated and foveated, becoming, after a time, paler than the surrounding integument.

During the course of a vaccination, more or less constitutional disturbance occurs, especially in children.

Eczematous and papular eruptions often develop in strumous children, for which the virus is unjustly held responsible.

VARICELLA.

Synonym. Chicken-pox.

Definition. A mild, slightly contagious, febrile affection ; characterized by a moderate fever, and the appearance of a *vesicular* eruption, drying up and falling off in from three to five days.

Cause. A peculiar poison ; attacking only children ; occurring sporadically and as an epidemic.

Symptoms. Moderate *fever*, thirst, anorexia and constipation, followed by the eruption of *vesicles*, which rapidly dry, and within the week drop off, leaving a slight *pit*. *Pustules* almost never occur. Symptoms are so slight, that, were it not for the vesicles, the affection would be often overlooked. The eruption appears on the *trunk* and *extremities*, very rarely on the forehead and in the mouth.

Prognosis. Most favorable.

Treatment. Entirely symptomatic. If vesicles on the face, efforts may be used to prevent pitting.

ERYSIPELAS.

Synonyms. Erysipelatous dermatitis ; the rose ; St. Anthony's fire.

Definition. An acute, specific, infectious disease ; characterized by a fever of low type, and a peculiar inflammation of the skin, gene-

rally of the neck and face. This inflammation exhibits a marked tendency to spread, to induce serous infiltration and suppuration of the areolar tissue, and to affect the lymphatic vessels and glands.

Cause. A poison, the nature of which is unknown. *Feebly contagious.* One attack predisposes to another. The etiology of idiopathic (medical) and traumatic (surgical) erysipelas are identical.

Symptoms. Onset sudden; a *chill*, followed by *fever*, which soon reaches 104° or 105° , *frequent pulse*, 100 to 130, coated tongue, *nausea* and *vomiting*, severe pains in the limbs, with epistaxis in adults and convulsions in children, and often *diarrhœa*.

Delirium is frequent, and in those of alcoholic habits it resembles delirium tremens.

The *eruption* soon follows the fever, beginning in *red spots*, which rapidly coalesce and spread; a sense of *heat*, *tension* and *tingling* is caused by the *great œdema*, which presents a *tense, shiny* appearance, the swelling being so great at times as to close the eyes and distort the features. In many cases *small vesicles* develop, which may coalesce, forming *blebs*, of considerable size, containing a clear yellow serum. After five or six days the eruption begins to subside, the symptoms abate, the part affected becomes tender, and there is moderate desquamation.

During the height of the attack *albumen* appears in the urine, so that the possibility of *uræmic* symptoms must be remembered.

When extensive *infiltration into the areolar tissue* occur, the swelling and tension become greater, and it is termed *phlegmonous erysipelas*.

When the *eruption spreads* to different parts of the body, it is termed *erysipelas ambulans*.

Complications. *Thrombosis* of cerebral capillaries or sinuses, or as it is sometimes called, "erysipelas of the brain," is explained by the intimate anatomical connection of the facial vein with the pterygoid plexus and cavernous sinus.

Œdematous laryngitis, from extension to the larynx.

Pneumonia, pleurisy and meningitis are frequent complications.

Diagnosis. Not difficult. The fever, early spreading eruption, with burning, swelling, tension and tingling, and albuminous urine, separate it from the other *eruptive fevers* and *erythema*.

Prognosis. Usually favorable. Unfavorable if it attack drunkards; if it becomes gangrenous; if thrombosis of sinuses occur, or if it extends to the larynx.

The convalescence, even from the mildest attack, is slow, the patient continuing weak and anæmic for a long time.

Treatment. Mildest cases only require a *laxative*, nourishing diet, and locally *vaseline* or *bismuth oleat.*, to modify the heat and burning.

According to Reynolds, *aconitum* will cut short an attack. He administers $\mathfrak{M}\frac{1}{2}$ -j, every fifteen minutes for the first two hours; then in hourly doses, until the surface is moist and the temperature lowered. The author corroborates this plan, from a personal experience.

In severe cases, *tinct. ferri chlor.*, gtt. xx-xxx, every third hour, well diluted. Also *quinina* in gr. ij, every third hour. *Ext. belladonnæ*, gr. $\frac{1}{4}$, added, with benefit. The diet from the onset should be of the most nourishing character, and administered at regular intervals.

Prof. Da Costa reports excellent results in cases with *rapid spreading* tendency, from the use of *pilocarpinæ hydrochloras*, gr. $\frac{1}{6}$, hypodermatically or *ext. pilocarpi fluidum*, gtt. xx-xl, every two hours.

Cerebral symptoms, *stimulants*, *opium* and *chloral*.

Extension to *throat*, *argenti nitras*, brushed over parts.

Locally, soothing applications are indicated, to wit: *Vaseline*, *ung. zinci oxidi*, *ol. olivæ cum glycerinæ*, *bismuth oleat.* or *ungt. hydrargyrum*.

In *phlegmonous* variety, *argenti nitras*, \mathfrak{H} j, *spts. ætheris nitrosi*, \mathfrak{z} ij, brushed over and beyond the affected part, with the internal use of large doses of *quinina*, *ferrum* and *stimulants*.

DENGUE.

Synonyms. Break-bone fever; neuralgic fever; dandy fever.

The word *dengue* is pronounced *dangay*.

Definition. An acute, epidemic, febrile disease, consisting of two paroxysms of fever with an intermission. The first paroxysm is characterized by high fever, distressing pains in the joints and muscles, and a peculiar eruption; the second paroxysm is characterized by a milder fever, an eruption of different character, attended with intense itching, by some recurrence of the joint pains, and by debility.

Cause. Unknown; but it is evident that a peculiar condition of the atmosphere has some influence in its development.

Symptoms. Onset sudden—*fever*, 103° to 105° , intense *headache*, *burning pains in the temples*, *backache*, severe *aching* and *swelling of the joints* and *stiffness of muscles*, nausea, vomiting, constipation, and the appearance of a *rash*, resembling scarlatina, from which the disease has been mistaken for scarlatinal rheumatism. After some hours to two or three days, a distinct *intermission* obtains, of one or two days' duration.

The onset of the second paroxysm is also sudden, but the symptoms are much less severe, although the patient is greatly *debilitated*; it is at this time that the characteristic eruption appears, being either *erythematous* or *rubeolous*, and attended with *intense itching*, remaining for about two days, when desquamation occurs and convalescence is established, but is prolonged by the great debility of the patient. Average duration of the disease eight days. *Relapses are common.*

Diagnosis. Most apt to be mistaken for *acute articular rheumatism*, especially during the *first paroxysm*, but the course of the disease and the epidemic influence should prevent such an error.

The eruption might mislead for *scarlet fever* or *measles*, were it not for the severe joint and muscular pains.

Prognosis. Favorable.

Treatment. *No specific.* Entirely symptomatic.

At the onset, free *purgation and diaphoresis*.

For the *fever*, *quinina*, gr. v. every five hours.

For the *pains*, *opium* or *acidum salicylicum*.

For the *itching*, lotion of *acidum carbolicum*.

DISEASES OF THE MOUTH.

CATARRHAL STOMATITIS.

Synonyms. Simple stomatitis; erythematous stomatitis; catarrh of the mouth.

Definition. An acute catarrhal inflammation of the whole or a portion of the mucous membrane of the mouth and tongue, characterized by redness, swelling and disordered secretion. Most common in infants and children. Chronic stomatitis occurs mostly in adults, the result of alcoholic or tobacco excesses.

Causes. Introduction of hot and irritating substances into the mouth; difficult dentition; secondary to disorders of the stomach, measles, scarlet fever or variola.

Pathological Anatomy. The buccal mucous membrane and tongue have a dark red appearance, are much swollen, the tongue often appearing as if too broad to lie between the teeth, the sides showing the impressions of the teeth; the secretions are at first lessened, afterwards increased, a turbid mucus covering the cheeks, gums and tongue, thus giving a *coated tongue*.

Symptoms. Oral catarrh begins with a *burning, smarting pain*, and *tension* in the mouth, in those old enough to describe their suffering. Very young children *refuse to nurse* or allow their mouth to be touched, have *slight fever*, disordered stomach, are *fretful* and *sleepless, craving cooling drinks*.

The sense of taste is blunted, and there is usually an unpleasant bitter taste in the mouth.

If the catarrh becomes *chronic*, the breath has a fetid odor and the tongue is coated in the morning, the taste is disordered, and there is generally more or less depression of spirits.

Diagnosis. If the buccal cavity be examined, the condition is readily discerned.

Prognosis. Recovery is the rule for the acute variety.

The *chronic* cases are usually due to the use of tobacco or alcohol, and are only modified by the absolute withdrawal of the exciting cause.

Treatment. The most important point in the treatment is the removal of the exciting cause, attention to the secretions and diet.

Locally—

R. Sodii boratis.....	3 ^{iss}
Aquæ destillat.....	f 3j
Mel. rosæ.....	f 3j.

FOLLICULAR STOMATITIS.

Synonyms. Aphthæ; vesicular stomatitis; croupous stomatitis.

Definition. An acute inflammation of the follicles and mucous membrane of the mouth and tongue, characterized by a *fibrinous* or *croupous exudation*; the exudation first appearing in *isolated spots* (*aphthæ discrete*), afterwards *coalescing*, and forming large and irreg-

ular-sized patches (*aphthæ confluens*), which rupture, leaving an ulcer, that slowly heals.

Causes. A disease principally of childhood. Difficult dentition ; disorders of digestion ; uncleanliness, such as neglect to rinse the child's mouth after nursing ; with measles and diseases of the buccal cavity.

Pathological Anatomy. Begins as a small, whitish papulo-vesicular elevation, semi-transparent, hard and tender, with a distinct red zone about their base ; there may be as few as six or as many as twenty ; they may remain isolated (*aphthæ discrete*) or coalesce (*aphthæ confluens*) ; they are regarded as either a peculiar deposit or a local croupous exudation. After a day or two they rupture, leaving an irregular white or grayish ulcer, which slowly heals. The seat of the affection is the internal surface of the lips and cheeks, the gums, tongue and roof of the mouth.

Symptoms. In infants, the *pain* is so severe that the child refuses to nurse. In older children, *pain* from *talking*, *mastication* and *deglutition*. *Salivation* is marked, the saliva dribbling from the mouth. There is slight *feverishness*, *fretfulness* and *sleeplessness*. *Digestion* is impaired, and quite commonly *diarrhœa* occurs. A *disagreeable*, *penetrating odor* escapes from the buccal cavity.

Diagnosis. Impossible to confound with any other affection if the buccal cavity is examined.

Prognosis. Always favorable.

Treatment. Removal of the exciting cause. Attention to the *dietary* and the secretions is paramount.

Internally, excellent results follow the use of *potassii chloras*, gr. j to v, every three or four hours, according to the age. Protracted cases require tonic doses of *quininæ sulphas*.

Locally, good results are obtained from strong solutions of *potassii chloras*, *infusum coptis* or *bismuth*, applied directly to the ulcers.

ULCERATIVE STOMATITIS.

Synonyms. Diphtheritic stomatitis ; gingivitis ulcerosa.

Definition. An acute diphtheritic inflammation of the mucous membrane of the mouth, continuing until extensive and unhealthy *ulceration* occur. It usually begins on the margin of the *lower gums*, and often extends to the lips, cheeks or tongue.

Causes. Usually seen in children only. Most frequently in the families of the poor, the result of unfavorable hygienic surroundings, personal uncleanness and poor food. Often seen in those reduced by severe acute disease. Perhaps contagious, as *epidemics* are not rare.

Pathological Anatomy. The *gums* first appear congested, swollen, bleeding readily and separated from the teeth; soon a firmly adherent deposit in the form of patches appears, at first whitish, speedily becoming gray or even black, from disintegration, becoming soft and pulpy, the separated slough leaving irregular-shaped *ulcers*, with raised margins, from œdema of the surrounding tissue. They are not deep, and their surface is covered with a pulpy, yellowish substance. The morbid process usually extends to the inner side of the lips, cheeks and to the tongue.

Symptoms. *Pain* constantly, aggravated by *mastication* or *deglutition*; food and drink must be of the blandest character. The *mouth* is *hot*, the *saliva* dribbles away, mixed with *blood* and shreds of *pulpy matter*, the *breath* is *fetid*, the appetite, digestion and bowels disordered. The patient is feverish, fretful and sleepless.

There is always enlargement and tenderness of the submaxillary glands.

The affection is often associated with *entero-colitis*.

Diagnosis. Apt to be confounded with gangrenous stomatitis, than which, however, there is less constitutional symptoms and a slower course of the malady.

Prognosis. Favorable. If promptly and properly treated, the ulcerated surface rapidly heals, although quite commonly some teeth are lost.

Treatment. The etiology of the affection must be borne in mind and remedied. Strict attention to the diet, to the secretions, and absolute cleanliness.

Internally, the prompt use of *potassii chloras*, gr. j-v, frequently repeated, often acts like a specific. The general health often calls for *quinina*, *ferrum* and *stimulants*.

Locally, a strong solution of *potassii chloras*, or keeping the ulcer covered with *bismuth*, or frequent applications of *alumen exsiccatum* are valuable. Cases which resist these remedies should have applied the following combination, proposed by the late Dr. Dewees;—

R.	Cupri sulphat.....	gr. x	
	Pulv. cinchonæ opt.....	ʒ ij	
	Pulv. g. arab.....	ʒ j	
	Mel. commun.....	f ʒ ij	
	Aquæ font.....	f ʒ ij.	M.
	Ft. sol.		

SIG.—The ulceration to be touched twice daily, with the point of a camel's-hair pencil.

If a spreading tendency occur, the application of *argenti nitras dilutus*, or a diluted solution of *acidum nitricum* is indicated.

THRUSH.

Symptoms. Muguet; sprue; white mouth.

Definition.—An inflammation of the mucous membrane of the mouth, associated with or caused by the growth of a *parasitic plant*, the *oïdium albicans*; characterized by pain, disorders of digestion and of the bowels.

Causes. The development of the thrush-fungus, *oïdium albicans*, is promoted by all those conditions designated as unhygienic, by debilitated conditions of the general system, and by neglect to thoroughly rinse the mouth after nursing or bottle feeding.

The age is considered a predisposing cause, seldom being seen after two years of age. In adults, only toward the end of cancer or consumption.

Pathological Anatomy.—The mucous membrane of the mouth assumes a dark red appearance in isolated patches, on which *whitish points* appear, which rapidly coalesce into large areas. They closely resemble curdled milk, from their soft consistency. These whitish points consist of epithelium and fat, in which are embedded the sporules and filaments of the fungus.

The deposit first appears about the angles of the mouth, soon extending to all parts of the cavity, often to the pharynx and œsophagus.

The mouth is usually swollen and tender, the breath often fetid.

Symptoms. *Pain*, aggravated by *nursing* or *mastication*. The lips are swollen, the *saliva* is *increased*, the *breath* *hot* and somewhat fetid. There is usually increased temperature. *Diarrhœa* is frequent, the stools green and sour, causing an erythema of the buttocks.

Diagnosis. The curd-like appearance of the deposit, showing the

presence of parasites upon microscopical examination, will prevent error.

Prognosis. Favorable, unless occurs toward the termination of exhausting diseases.

Treatment. Absolute cleanliness of the mouth is all important.

Internally, remedies should be directed to the removal of the disorders of the gastro-intestinal tract.

Prompt relief has followed the use of *Sodii hyposulphitis saturat. solut.*, gttss. iij-x every two or three hours, and the local application of the same solution.

Locally, solutions of *sodii boras* often answer every indication, the best vehicle being *glycerinum*, and not *mel* or *saccharum*, a good formula being—

R.	Sodii boratis.....	ʒj	
	Glycerini.....	fʒij	
	Aquæ.....	ʒvj.	M.

SIG.—Thoroughly applied four or five times daily, and continued for a week after the disappearance of the affection.

GLOSSITIS.

Definition. An inflammation of the parenchyma of the tongue; characterized by great swelling of the organ, with difficult mastication, deglutition and vocalization.

The affection may be either *acute* or *chronic*.

Causes. The *acute variety* is usually the result of some direct irritation to the tongue, such as direct injury, contact of boiling liquids, the action of acrid or corrosive substances, or the sting of the tongue by an insect, such as the bee or wasp.

The *chronic variety* is generally circumscribed; it may follow the acute; be due to the sharp edges of the teeth, or the use of a tobacco pipe.

Pathological Anatomy. *Acute glossitis* begins with intense hyperæmia, redness and swelling of the organ; the size often becomes so great that the tongue is too large for the mouth, and thus protrudes between the teeth; its surface is covered with a thick secretion, and it becomes of a pale or grayish color. The swelling may rapidly decline, or abscesses may form, which leave a more or less decided depressed cicatrix.

Chronic glossitis occurs usually along the edges, the cicatricial changes being in circumscribed hard spots. If the entire organ is affected with chronic inflammation, the action is superficial, and has been termed "psoriasis of the mouth."

Symptoms. *Acute glossitis* begins rather abruptly with *fever*, increased *pulse*, *restlessness*, *anxiety*, *enlargement* of the *tongue*, the sensation of *heat* in the mouth, with *pain*, and *increased* flow of *saliva*. *Mastication* and *deglutition* become difficult if not impossible, the *voice muffled* and *dyspnœa* decided. The *glands* at the angles of the jaw are *enlarged*, which, in turn, compress the vessels of the neck.

When *suppuration* supervenes, the constitutional symptoms become severe and the oral symptoms are intensified. *Death* has occurred from suffocation in severe cases.

Chronic glossitis presents *pain* as the chief symptom, aggravated by movements of the organ.

Diagnosis. The rapid course of *acute glossitis* should prevent its being mistaken for any other affection.

Chronic glossitis, if severe, might be mistaken for *cancer* of the tongue, although the slow and mild progress of the former contrasts strongly with the rapid, severe and painful course of the latter, with its marked constitutional symptoms.

Prognosis. *Acute glossitis* usually terminates in recovery within a week, although the danger of suffocation must always be remembered.

Chronic glossitis is an incurable malady in the majority of instances.

Treatment. For *acute glossitis* prompt measures are demanded.

For the *fever* and *rapid pulse*, *tinctura aconiti*, gtt. j to iij every half hour or hour until its effects are produced.

For the *enlargement* of the organ, either *ice* constantly applied internally and externally, at the angles of jaw, or the persistent use of *hot water* held in the mouth and externally; if prompt relief does not follow these measures, or if the case is an aggravated one, the prompt *deep scarification* of the tongue must be resorted to.

If *abscesses* form, promptly open them and administer *quinina*.

If *suffocation* appear imminent, *tracheotomy* must be performed.

For *chronic glossitis*, the removal of the exciting cause and the local use of *argenti nitras* to the ulcerated edges.

"For psoriasis of the tongue," the local use of *argentum* or *acidum carbolicum*.

The general health must always receive due attention.

DISEASES OF THE STOMACH.

ACUTE GASTRIC CATARRH.

Synonyms. Acute mild gastritis; gastric fever; bilious fever; acute indigestion; subacute gastritis.

Definition. An acute catarrhal inflammation of the mucous membrane of the stomach; characterized by feverishness, loss of appetite, nausea, with occasional vomiting, painful digestion, irregularity of the bowels, and in severe attacks, vertigo (*stomachic vertigo*).

Causes. Deficient quantity of or quality in the gastric juice. Errors in diet, insufficient mastication of food, swallowing liquids which are either too hot or too cold, and especially, the abuse of alcoholic drinks.

Often secondary to infectious diseases, such as scarlet fever, measles, smallpox, diphtheria and typhoid fever. Occasionally the result of sudden changes of temperature.

Pathological Anatomy. The mucous membrane is irregularly congested and engorged, and covered with a grayish, semi-transparent and *tenacious mucus*, having an *alkaline* reaction. The *true gastric juice* is secreted in *lessened amount* or is *entirely suspended*.

Symptoms. At first, *loss of appetite*, at times *disgust for food*, heavily coated tongue, bad *taste* and *breath*, persistent *nausea*, and at times, *vomiting*, first of undigested food, then viscid mucus, acid and bitter, and finally, bilious matter; moderate *irritative fever* is present, with *headache*, considerable *thirst* and flashes of heat with sensations of burning in the palms of the hands and soles of the feet; *acid drinks* eagerly sought after; *digestion imperfect*, giving rise to *pain*, *tenderness*, *feeling of weight* and *eructations*; bowels often loose, sometimes, however, constipated. *Vertigo* with *pain* in the *nucha*, is a prominent symptom in many cases, causing great anxiety. The *urine* is scanty, containing *lithates* and pigment.

The symptoms are aggravated by errors in diet, and if saccharine or fatty articles are taken, *heartburn* occurs.

Towards the termination of an attack, *herpetic* eruptions appear about the mouth.

Diagnosis. Acute gastric catarrh with fever, may be confounded with *remittent* and *typhoid fever* of the first week, but all doubts will disappear as these maladies develop.

The *vertigo* may be mistaken for *cerebral disease*, but the disappearance of this symptom when stomachic treatment is inaugurated dispels all doubt.

Prognosis. Favorable. Duration about a week; recovery slow, even under treatment, as far as perfect digestion is concerned.

Treatment. Give the stomach as complete *rest* as possible. If the stomach is overloaded, an *ipécac emetic* is indicated, or if vomiting has begun, it may be encouraged by swallowing large draughts of hot water, which will act as a sedative if the stomach be empty. *Irritability of the stomach* is readily controlled by—

R.	Hydrarg. chlor. mitis.....	gr. $\frac{1}{20}$ — $\frac{1}{10}$	
	Sodii bicarb.....	gr. ij	
	Pulv. aromat.	gr. v.	M.

Every two hours,

which has the additional advantage of relieving the bowels, or—

R.	Bismuthi subnit.....	gr. xv	
	Acid. hydrocyanici, dil.....	mij	
	Mucil. acaciæ.....	f ʒ ss	
	Aq. menth. pip.....	f ʒ iss.	M.

SIG.—Every two or three hours.

Weak *alkaline mineral waters* or *liquor calcis*, should be freely used.

After the acute symptoms have subsided—

R.	Tinct. nucis vomicis.....	gtt. iv—x	
	Acid. hydrochlor. dil.....	gtt. x	
	Glycerini.....	ʒ ss	
	Aquæ lauro-cerasi.....	f ʒ iss.	M.

Before meals, will improve the appetite and digestion.

ACUTE GASTRITIS.

Synonym. Toxic gastritis.

Definition. An acute and violent inflammation of the mucous, submucous and muscular coats of the stomach, with loss of tissue; characterized by great pain, constant vomiting of blood-streaked or bloody mucus and symptoms of collapse.

Causes. Ingestion of irritant and corrosive poisons, to wit: mineral acids, arsenic, corrosive sublimate, copper and carbolic acid.

Pathological Anatomy. The mucous membrane is vividly red and injected, more marked at some portions than at others; it is soft and friable; erosions are irregularly scattered, and the submucous, muscular, and at times serous coats show decided destructive changes. The gastric tubules are destroyed in large numbers. In many cases the *oral* mucous membrane presents signs of severe inflammation.

Symptoms. Immediately or soon after swallowing the irritant there ensues a deadly *nausea*, rapid and *persistent vomiting*; first, of the contents of the stomach acted upon by the poison; afterwards, shreds of mucous membrane and blood clots; great *anxiety* and *depression*, a *weak, rapid pulse*, *slow* and *shallow respiration*, *cold skin*, covered with a *cold sweat*, *intense burning heat* at the epigastrium, *thirst* with *burning* in the *fauces* and *gullet*, and *exhaustive purging*; the *features* are *more or less retracted* or *sunken*; these symptoms terminating in collapse and death, or slow convalescence and recovery with a crippled stomach.

A *diagnosis* of the character of the poison swallowed is often afforded by the *stain* of the lips, face and mucous membrane, to wit: *sulphuric acid*, blackish eschar; *nitric acid*, yellowish eschar; *caustic potash*, spreading widely and softening the tissues; *corrosive sublimate*, whitish or glazed; *carbolic acid*, white and corrugated.

Prognosis. Very grave. Majority perish from shock, and destruction of mucous membrane, which prevents nourishing. Early treatment when no perforation of the walls of the stomach and recovery is possible, the organ being ever after much weakened.

Treatment. *At once*, hypodermatic injection of *morphina*, repeated at regular intervals.

Vomiting should be encouraged by the free use of *demulcents*.

If the case be seen within a short period of the swallowing of the

poison, the proper antidote should be used ; but if some hours have elapsed, it is useless. *Ice*, internally and externally, gives great relief. The stomach should be washed out with the stomach pump, thereby removing any remaining poison, while at the same time it acts as a sedative to the inflamed membrane ; also *bismuthi subnit.*, grs. xx-xxx every hour or two, is beneficial.

Milk and *lime water* is the only food that should be given by the stomach, *enemata* being used to support the system.

CHRONIC GASTRIC CATARRH.

Synonyms. Chronic gastritis ; chronic dyspepsia ; drunkards' dyspepsia.

Definition. A chronic catarrhal inflammation of the stomach, with thickening of the coats and atrophy of the gastric glands ; characterized by tenderness over the epigastrium, impaired appetite, painful and imperfect digestion, thirst, and great depression of the mental powers.

Causes. Repeated attacks of acute gastric catarrh ; habitual use of spirituous liquors ; disease of the heart, lungs, pleura or liver, producing chronic congestion of the stomachic vessels ; cancerous or other degenerative diseases of the stomach.

Pathological Anatomy. The mucous membrane is of a brownish or slate color, elevated into ridges from hypertrophy, the result of constant congestion ; the peptic glands first increase in size, then undergo granular change, atrophy of their cells resulting. The mucous membrane is covered with a thick, alkaline tenacious mucus. These changes may affect the entire organ or be limited in extent.

Symptoms. *Loss of appetite*, disagreeable feeling of *fullness* in the stomach, *tenderness* at the epigastrium, but slightly influenced by eating, *prominence* of the epigastrium, from distention by decomposing gases, occasional *nausea* and *vomiting*, the latter more common in drunkards, occurring on arising, termed *morning vomiting* and consisting of glairy mucus raised after great retching ; *constant thirst*, water and at times stimulus being craved ; often great *burning* at the pit of the stomach, the result of acidity ; *bowels constipated*, *urine* high colored. A feeling of *mental depression* and *sleeplessness*, with occasional attacks of *vertigo*, add to the misery of the patient. *Follicular pharyngitis* of an aggravated type adds to the general distress of the

patient. The imperfect digestion causes more or less *loss of flesh*, the fat disappearing, the muscles relaxed and the skin dry.

Prognosis. Favorable as to life, but not as to complete recovery, the atrophied glands more or less hindering digestion and assimilation.

Treatment. Regulated diet. Avoid fatty, saccharine and starchy food. Also all *tonics, bitters, or acids, unless specially indicated.*

Locally, few *leeches, dry cups, a blister, or emplastrum belladonnæ.*

Purgatives are doubly indicated; *first*, relieving the constipation; and *second*, clearing the stomach of the tenacious mucus, which neutralizes what gastric juice is secreted. Appropriate purgatives are the natural mineral waters, such as Saratoga or Friedrichshall, or—

R.	Magnesii sulph.....	℥ i-ij	
	Sodii et potass. tart.....	℥ ss-j	
	Acid. tartaric.....	gr. xx.	M.

Dissolved in a glass of water and drank, effervescing, an hour before breakfast.

Digestion may be temporarily aided by *pepsinum* or *lactopeptin* with the meals.

Great relief follows the systematic drinking of one-half to one pint of *hot water* an hour *before* meals.

For the morbid condition itself may be used, *liq. potassii arsenitis*, gtt. i-ij *before meals*, or *bismuth subnit.*, gr. x-xx, *before meals*, to which may be added *sodii bicarb.*, gr. v; or *argenti nitrat.*, gr. $\frac{1}{4}$ - $\frac{1}{3}$, or *argenti oxidum*, gr. $\frac{1}{2}$ -j, in pill, *before meals*, or *acidum hydrochloricum dilutum*, in water, *before meals*.

Pain is so severe in some cases that resort must be had at times to *opium* or *belladonna* in small doses, after meals.

Rest of the body is almost as imperative as rest of the stomach.

GASTRIC ULCER.

Synonyms. Chronic gastric ulcer; perforating ulcer.

Definition. A solution of continuity, involving the mucous membrane and one or more layers of which the walls of the stomach are composed; characterized by pain, disorders of digestion and vomiting of blood.

Causes. Anæmia or its sequelæ the chief factor. Most common in young anæmic women. Virchow claims that *emboli* or *thrombi*

form in the nutrient gastric arteries which have lost their tonicity, an ulcer forming at the point of obstruction.

Pathological Anatomy. In the majority of cases the ulcer is solitary. The posterior wall near the pylorus is the most common site.

In a typical case there is a circular hole, with sharp borders in the serous coat of the stomach; the loss of substance is greater in the mucous membrane than in the muscular coat, and greater in this than in the serous coat, so that the ulcer looks like a shallow funnel, the apex at the outer wall, the base at the inner wall of the stomach; it is first round, growing, becomes elliptical, bulging at portions, becoming irregular; size, from $\frac{1}{4}$ – $\frac{1}{2}$ inch in diameter. When the ulcer heals before all the coats are perforated, a distinct cicatrix marks the location. During its progress nutrient vessels are eroded, causing profuse hemorrhage. Chronic gastric catarrh complicates the majority of cases.

Symptoms. More or less prominent symptoms of indigestion. *Pain* constant at the "pit of the stomach," increased by taking food, especially of an irritant kind, the pain often felt in the back, of a *burning, gnawing* character. *Tenderness* at one or more points, extending from the front to the back. *Vomiting* is almost as constant as pain, coming on soon after eating if the ulcer is at the cardiac orifice, an hour or so after if it is at or near the pylorus. Rejected matter may be undigested or partly digested food, or simply acrid mucus. *Vomiting of blood* in large quantities and arterial in color is almost diagnostic of gastric ulcer; the blood may be dark in color if it has remained in the stomach some time before being rejected.

Severe and frequent attacks of *gastralgia* may add to the suffering of the patient. The general condition of the patient is not significant, some being greatly debilitated, while in others the nutrition is but little deranged.

Duration. The ulcer is slow in forming, and runs a very chronic course, an average duration being, perhaps, a year. Cases are recorded in which the disease has suddenly developed and terminated by *perforation, peritonitis* and *death* within two weeks, but such are rare.

Diagnosis. *Duodenal ulcer* presents symptoms so akin to those of gastric ulcer that a differential diagnosis is impossible.

Chronic gastritis is often confounded with gastric ulcer; the dis-

tinctive points are, absence of vomiting of blood, no localized constant pain aggravated by food, and no tenderness in the back ; while the symptoms of indigestion are marked and persistent, with, as a rule, a history of spirit drinking, and the age of the patient—middle life ; ulcer in the young.

The points of distinction between *gastric cancer* and *gastralgia* will be pointed out when considering those affections.

Prognosis. Not very unfavorable. Recoveries are frequent. The dangers are *perforation*, *peritonitis* or *fatal hemorrhage*.

Treatment. Give the stomach as complete a rest as possible ; this is accomplished by *rectal* alimentation, or where it cannot be carried out, exclusive *milk* diet, adding *lime water*, to enable the stomach to better retain the milk ; the amount of milk should be one or two ounces every two hours. *Rest in bed* is paramount, and should be insisted upon.

For *pain*, small doses of *morphina* should be used as needed.

For *hemorrhage*, hypodermatic injections of *ergota* are most reliable. *Plumbi acetat.*, gr. j–iij arrests the bleeding and exercises a favorable influence over the ulcer.

For the *ulcer*, *liq. potassii arsenit.*, gtt. j–ij every five hours, has given excellent results in several cases treated by the author ; *bismuth subnitrat.*, gr. xx–xxx, combined with *sodii bicarb.*, gr. iij–v, three times a day, often does well ; *argenti nitras*, gr. $\frac{1}{4}$ – $\frac{1}{3}$, every four hours, or *argenti oxidum*, gr. ss, every four hours, are at times beneficial.

If *perforation* and *peritonitis* result, full doses of *opium* are indicated.

GASTRIC CANCER.

Synonyms. Cancer of the stomach ; gastric carcinoma.

Definition. A peculiar malignant growth, occurring for the most part at the pyloric extremity of the stomach, making constant progress, destroying the gastric tissues and infecting the lymphatic glands ; characterized by disorders of digestion, pain, vomiting, marked anæmia, and terminating in all cases by the death of the patient.

Cause. Hereditary. Develops after forty years, for the most part.

Pathological Anatomy. Cancer of the stomach is the most common form of cancer. It is, as a rule, primary cancer. The variety is most commonly the *scirrhous*, next in frequency, *medullary*,

the least frequent, *colloid*. As regards the location, eighty per cent. occur at the *pylorus*.

It originates usually in the *tubules*, rapidly infiltrating the remaining tissues, thickening everywhere as it progresses, and either remains a hard nodulated mass or undergoes ulceration. The hard nodulated growth at the pylorus constricts the orifice, resulting in dilatation of the stomach. The lymphatic glands adjacent to the stomach are infiltrated, secondary cancers resulting. Ulceration into an artery causes hemorrhage into the peritoneum, resulting in local peritonitis.

Complications. Fatty heart; thrombosis; tuberculosis.

Symptoms. *Indigestion*, progressive in character, with *marked acidity, flatulency* and a fetid breath.

The majority of cases have *vomiting* immediately after eating, if at the cardiac orifice, and some hours after it at the pylorus, and if much dilatation of stomach, some days after. The rejected matter is food in various stages of digestion, with frequently *black grumous masses* of altered blood. *Pain*, marked and constant, *dull, heavy*, increased by pressure, seldom lancinating. Marked *anæmia, emaciation*, and towards the end *dropsy*, the surface having an earthy or *fawn color*. A *tumor* is found in three-fourths of the cases, occupying the epigastric region, *not moving with inspiration*.

The duration of the disease is about one year, the patient dying from *exhaustion, peritonitis* or *hemorrhage*.

Diagnosis. *Chronic gastric catarrh* differs from gastric cancer, in the absence of a tumor, bloody vomit, characteristic pain, peculiar color of the surface, dropsy and the rapid emaciation.

Gastric ulcer differs in the character of the pain, age of the patient, large amount of bloody vomit, absence of a tumor and progressive emaciation. Still the diagnosis is often difficult.

Abdominal tumors may raise the question of a gastric cancerous tumor; the points of distinction are the characteristic symptoms of gastric cancer, and that abdominal tumors, especially of the liver and spleen, the ones most apt to cause error in diagnosis, are influenced by inspiration, while *tumors of the stomach* are not so influenced.

When a scirrhus of the pylorus lies upon the aorta, a pulsation may be communicated to it, raising the question of *aneurism of the abdominal aorta*, but the expansile pulsation of aneurism (Corrigan's sign) is wanting, as are the other symptoms of the affection, and if

the patient is made to rest upon his hands and feet, the stomachic tumor falls away from the aorta and pulsation ceases.

Mikuliez claims that, by the use of his *gastroscope*, regular rhythmical motions can be seen when the pylorus is not the seat of cancer, and that such movements are absent when it is the seat of cancer.

Prognosis. Unfavorable. Internal medication offers no hope, the patient usually succumbing from starvation.

Gastric carcinoma occurring under thirty years of age is rapidly fatal, not conforming to the usual symptoms as seen later in life; the characteristic cachexia is commonly absent and hæmatemesis is rare.

Treatment. We possess no means of arresting the disease. "Six operations have been practiced for the relief of stenosis of the pylorus: 1st. Pylorectomy; 2d. Gastro-enterostomy; 3d. Gastrectomy; 4th. Gastrostomy; 5th. Duodenostomy; 6th. Digital divulsion of the pylorus." Professor Billroth has *excised* the pylorus, thereby prolonging life ten months.

For *acidity* and *fetor of the breath*, *acidum carbolicum*, gr. $\frac{1}{4}$ – $\frac{1}{3}$, or *carbo animalis purificatus*, gr. x–xxx, affords some relief.

For *vomiting*, *bismuth* and *opium*, or the washing out of the stomach with the stomach pump.

For *pain*, *morphina*.

Avoid stimulants.

GASTRIC DILATATION.

Synonyms. Pyloric obstruction; pyloric stenosis.

Definition. An abnormal increase of the cavity of the stomach, with the walls either hypertrophied, or decreased in thickness; characterized by pronounced indigestion, vomiting of partly digested and partly decomposed food at intervals of every few days, and moving of flatus in the abdomen (borborygmus).

Causes. Most common, stricture of the pylorus, the result of cancer; pressure of tumor against the pylorus, preventing exit of stomach contents. Loss of muscular tone, occurring in anæmia. Prof. Bartholow cites cases resulting in excessive beer-drinkers, who drank thirty to forty glasses of beer habitually, every day.

Pathological Anatomy. When obstruction exists at the pylorus, the whole organ is dilated, with hypertrophy of the muscular

layer of the stomach. In dilatation without pyloric obstruction, the muscular layer is thinner than normal, pale in color, and presents signs of fatty degeneration; the mucous membrane is also pale, thin, and without rugæ.

Symptoms. Those of the disease producing the obstruction *plus* those of obstinate chronic gastric catarrh, with *characteristic vomiting*; the cavity having a greatly increased capacity, large accumulations take place, which are rejected every few days, partly digested and partly decomposed. *Regurgitation* of partly digested aliment, acrid, acid and offensive, is very common. *Bowels constipated*, the stools hard and dry.

Physical signs of gastric dilatation are: *on inspection*, abnormal prominence of the whole epigastric region, with a tumor in the *pyloric region* which seems to be connected with the stomach; *percussion*, if empty, tympanitic note extending to or below the umbilicus, having a metallic quality; if the stomach be filled, high pitched flat note; *auscultation*, splashing and rumbling sound, the succussion sound being distinct if the body be shaken.

Diagnosis. The cause being ascertained, no difficulty is experienced in making a diagnosis.

Treatment. Regulated diet. Restrict the use of fluids, using a "dry diet" almost exclusively.

If the result of pyloric stenosis, one of the operations noted in pyloric cancer may be indicated.

Regardless of the cause, washing out the stomach with the stomach pump, every day or two, gives relief, and, if no stricture, administering *strychnia* or *nux vomica*, and very favorable results may follow.

GASTRIC HEMORRHAGE.

Synonyms. Hæmatemesis; gastrorrhagia.

Definition. Gastric hemorrhage is not, strictly speaking, a disease, but a *symptom*; still, vomiting of blood occurs under such a variety of conditions, that a separate consideration is desirable.

Causes. Ulcer of the stomach; cancer of the stomach; scurvy; purpura; hemorrhagic malarial fever; congestion of the liver or spleen; vicarious at menstrual period; yellow fever.

Symptoms. Added to the symptoms of the cause of the hemorrhage, are a *feeling of faintness* and *sinking at the pit of the stomach*,

followed by the ejection of blood of a *black, grumous, or coffee-ground* appearance. Rarely, and then generally in gastric ulcer, the ejected blood may have a *bright red* appearance, the gastric juice not having had time to act upon it. If the amount of blood escaping into the stomach is large, *blood will be voided by stool*.

Diagnosis. *Hemorrhage from the lungs* may be confounded with gastric hemorrhage. In the former, the blood is red, is coughed up, not vomited, and is associated with a history of pulmonary disease. The chief point of distinction between pulmonary hemorrhage and the vomiting of red blood is, that in the former you can discern râles on auscultating the chest, and they are absent in the latter.

Prognosis. Depends entirely upon the cause, the most unfavorable being the result of either gastric ulcer or cancer.

Treatment. Perfect rest in bed. *Ice*, internally and applied in bladders over the epigastrium and along the spine.

Hypodermatic injections of *morphina* quiet the patient's fear, and at the same time has a constricting effect upon the vessels. *Extraction ergotæ fluidum* or *ergotin* hypodermatically after the patient is quieted, or *liquor ferri subsulph.*, gtt. j-v, well diluted by stomach.

Allow no food by the stomach for several days, nourishing the patient by rectal alimentation.

The hemorrhage controlled, the future treatment is guided by the exciting cause.

GASTRALGIA.

Synonyms. Cardialgia; gastrodynia; stomachic colic; spasm of the stomach; neuralgia of the stomach.

Definition. A painful condition of the sensory nerves of the stomach, induced by various sources of irritation; characterized by violent paroxysms of gastric pain and spasm, associated with feeble cardiac action.

Causes. The affection belongs to the group of neuralgiæ. The most important factor in its causation is general nervous depression; other causes are malaria, rheumatic or gouty diathesis, anæmia, and certain articles of diet.

Symptoms. Like most neuroses, gastralgia is distinguished by its *paroxysmal* character. *Romberg* thus describes an attack:—

"Suddenly, or after a feeling of pressure, there is severe *gripping pain* in the stomach, usually extending to the back, with a *feeling of*

faintness, shrunken countenance, cold hands and feet, and an *intermittent pulse*. The *pain* becomes so excessive, the patient cries out. The *epigastrium* is either *puffed out*, like a ball, or *retracted*, with tension of the abdominal walls. There is often *pulsation in the epigastrium*. External pressure is well borne, and not unfrequently the patient presses the pit of the stomach against some firm substance, or compresses it with his hands. *Sympathetic pains* often occur in the thorax, under the sternum, and in the œsophageal branches of the pneumogastric, while they are rare in the exterior of the body."

"The attack lasts from a few minutes to half an hour; then the pain gradually subsides, leaving the patient much exhausted; or else it ceases suddenly, with eructation of gas or watery fluid, or with vomiting, and with a gentle, soft perspiration, or with the passage of reddish urine."

Besides such severe attacks, we often see *painful sensations in the epigastrium*, of various degrees of intensity, with passing faintness or sinking at the "pit of the stomach."

Diagnosis. From *myalgia of the abdominal muscles*, by the pain of gastralgia being more acute and lancinating, accompanied by nausea and vomiting and the absence of tenderness on pressure.

From *intercostal neuralgia*, by the fact that in this affection the pain is in the left hypochondrium, with painful spots along the course of the nerve trunk and at the spine, and absence of nausea and vomiting.

From *gastric cancer*, by the age, character of the vomited matter, constancy of the pain, the cachexia, emaciation and the tumor.

From *gastric ulcer*, by the localized pain and its constancy, with tenderness and vomiting of blood, and constant dyspeptic symptoms, which is not the case in gastralgia.

Prognosis. As to perfect recovery, unfavorable, but not dangerous to life. A chronic affection, in that attacks are prone to return from time to time. The cause has much to influence a radical cure.

Treatment. For the *paroxysm*, hypodermatic injections of *morphina*, gr. $\frac{1}{12}$ – $\frac{1}{4}$, or the stomachic administration of the "compound of anodynes," the so-called *chlorodyne*, in doses of m℥x-xxx p. r. n. The relief afforded by opium in some form is so decided that it is prone to lead to the opium habit when the attacks are frequent.

In the interval, regulated diet and one or more of the following

remedies : *quinina*, *arsenicum*, *bismuth*, *ferrum*, *liq. iodi. comp.*, or small doses of *potassii iodidum*.

ATONIC DYSPEPSIA.

Synonyms. Dyspepsia ; indigestion ; heartburn ; pyrosis.

Definition. A functional derangement of the stomach, with either deficient secretion in the *quantity* or *quality* of the gastric juice ; characterized by disorders of the functions of digestion and assimilation.

Causes. Imperfect mastication ; bolting of food ; eating large quantities of food ; same diet long continued ; depressed nervous system, from worry and fatigue. It is often inherited.

Symptoms. *Perverted appetite*, capricious or lost ; *difficult digestion*, a feeling of weight or fullness in the epigastrium ; *acidity*, from the decomposition of albuminoids ; *heartburn*, *flatulency*, *regurgitation*, or *vomiting* of portions of partly digested food or acrid fluid—*water brash* or *pyrosis*. *Pain* or *soreness* at the “pit of stomach” during digestion. *Tongue* either clean or broad, flabby and pale, showing marks of the teeth. *Bowels* constipated ; *urine* generally scanty and high-colored, with excess of urates or oxalates, or, in persons of nervous type, it is pale, of low *specific gravity*, and contains phosphates. *Drowsiness* after meals, with *wakefulness* at night, *defective memory*, *headache* and absent mental vigor, with *flashes of heat*, followed by more or less perspiration. Palpitation of the heart with irregularity in rhythm.

Prognosis. With careful living, dyspepsia, functional in character, is curable. It has been aptly termed “remorse of the stomach.”

Treatment. The most important indication is to regulate the diet. *Forbid saccharine, starchy or fatty articles of food*. Eat small amounts at a time. Perfect insalivation and mastication. *Rest after eating*, from a half to an hour. Allow but small quantities of liquids with the meals. In the vast majority of cases *forbid the use of stimulants with the meals*.

Aid digestion with *pepsinum*, with or without *acidum hydrochloricum dilutum*.

Stimulate stomachic peristalsis with *nux vomica*, *gentian* or *cinchona*.

For *acidity*, *alkalies* at times of acidity.

For *pyrosis*, *bismuth* and *pulvis aromaticus*, in large doses.

For *constipation*, *resina podophyllum*, at bedtime.

For *anæmia*, *massa ferri carbonatis* or *ferri lactas*.

For *flatulency*, *tinctura nucis vomicæ*, before meals, *carbo animalis purificatus*, or *acidum carbolicum*.

DISEASES OF THE INTESTINAL CANAL.

INTESTINAL INDIGESTION.

Synonym. Intestinal dyspepsia.

Definition. A derangement in the functions of intestinal digestion, resulting in the more or less complete decomposition of the *chyme*, from defects in the pancreatic, biliary or intestinal secretions, or from deficient peristalsis, one or more, singly or combined; characterized by abdominal pain, distention, tympanites, nervous perturbation, anæmia and emaciation.

Causes. Imperfect diet; over eating; anæmia; deficient exercise; worry; immoderate use of tobacco; diseases of the intestinal tract, liver or pancreas. Frequently inherited.

Symptoms. Intestinal indigestion may be either *acute* or *chronic*, the latter the more common.

Acute variety, the result of an irritant in the duodenum; rapidly developed *pain*, *flatulency*, *borborygmi*, slight *feverishness*, coated tongue, loss of appetite, headache, *pains in the limbs*, usually terminating in a mild attack of *diarrhœa*.

If the attack develops rapidly, the sudden formation of gases results in a paroxysm of *colic*.

Severe attacks are associated with disordered hepatic function, to wit: light-colored stools, slight jaundice and high-colored urine.

Chronic variety, resulting from a greater or less decomposition of the partly altered food from the stomach. *Pain*, varying in character, occurring from two to four or six hours after meals, with *slight tenderness* and some *fullness* in the right hypochondrium, epigastrium or the umbilical region. *Tympanites* and *borborygmi* are marked, the result of gaseous accumulations which have resulted from the decomposition of the intestinal contents. *Dyspnœa*, the

result of pressure on the diaphragm, is of frequent occurrence. Marked nervous phenomena develop, the result of the anæmia from deficient assimilation and from the depressing influence on the nervous system of the absorption of the "gases of decomposition;" *depression of spirits, hypochondriasis, sleeplessness, disturbing dreams, headache, vertigo, buzzing in the ears, muscæ volitantes, deficient mental application, cardiac irritability, numbness and tingling in the extremities, anomalous pains throughout the body*, and in marked cases, attacks of *fainting, epileptiform and cataleptic* attacks.

The *skin* is harsh and dry, the *bowels* are sluggish or *constipated*, the *urine* is high colored, of increased density, decidedly acid, and on cooling deposits lithates, uric acid and oxalate of lime crystals.

Functional derangement of the liver follows after a time, adding to the general distress.

Anæmia and *emaciation* result if the attack is protracted.

Diagnosis. With our present knowledge it is usually impossible to designate forms of intestinal indigestion due to defects in the quantity or quality of either the pancreatic, biliary or intestinal secretions.

Acute intestinal indigestion differs from gastric indigestion in the time of the various phenomena, in the latter the symptoms appearing almost immediately after meals, while in the former not appearing until two, four or six hours after.

Chronic intestinal indigestion may mislead the physician if the various nervous phenomena are of a marked character, and a careful history of the case is not developed.

Prognosis. Favorable if proper and early treatment is inaugurated, unless the result of an organic lesion.

Treatment. *Acute variety*, the result of undigested food is best treated by *opium* in some form, to relieve the acute suffering, warmth to the abdomen, and a prompt cathartic to cause its rapid expulsion.

Chronic variety: Of the first importance is the diet, which should be restricted in amount and confined almost entirely to such articles as are readily digested in the stomach.

The hepatic, pancreatic and intestinal secretions should be stimulated by a course of *alkalies*, one of the most efficient being *sodii phosphas.*, ʒj-ij, three times a day.

Aid intestinal digestion by the administration of the *liquor pancreaticus*, fʒj-iv, of the *extractum pancreatis*, gr. ij-vj, with *sodii bicarbonatis*, gr. v-x, two or three hours after meals.

For constipation, bitter waters, such as Friedrichshall, Pullna, or Hunyadi János, or *resina podophyllum*, at bedtime.

INTESTINAL COLIC.

Synonyms. Enteralgia; tormina; gripes.

Definition. A spasmodic contraction of the muscular layer of the intestinal tube; characterized by acute paroxysmal pain near the umbilicus, relieved by pressure, and associated with feeble cardiac action.

Causes. Constipation; presence of indigestible food; collections of flatus; an abnormal amount of bile discharged into the intestines; lead poisoning; syphilis; chronic malaria; hysteria.

Symptoms. *Romberg* thus describes a paroxysm: "There are attacks of *pain*, spreading from the navel over the abdomen, alternating with intervals of ease. The pain is *tearing, cutting, pressing*, most frequently *twitching, pinching*, accompanied by peculiar *bearing-down pains*. The patient is restless, and seeks *relief* in changing his position and in *compressing the abdomen*; his surface may be cold and his features pinched. The *pulse is small and hard*. The abdomen is tense, whether puffed up or drawn inward. There are *often nausea and vomiting*, and *desire for stool*. There is usually constipation, but sometimes the bowels are regular or even too loose. *Duration* from a few minutes to several hours, relaxing at intervals. The attack ceases suddenly, with a feeling of the greatest relief, although some soreness remains for a few days."

Lead colic is always preceded by symptoms of lead poisoning, to wit: slate-colored skin, dark gums, showing blue line, heavy breath, with sweetish metallic taste, obstinate constipation, impaired appetite, slow pulse and contracted abdominal walls.

Diagnosis. *Gastralgia* differs from colic, in the pain being in the epigastric region and associated with disorders of digestion.

In *hepatic colic*, or the passage of gall stones, the pain is in the hepatic region, attended with soreness over the gall bladder, and retching and vomiting, followed by jaundice and the presence of bile in the urine.

In *nephritic colic* the pain follows the course of one or both ureters, shooting to loins and thigh, with retraction of the testicle of the affected side, strangury and bloody urine.

In *uterine colic* the pain is in the pelvis, and associated with menstrual disorders, in fact, a dysmenorrhœa.

In *ovarian colic* or neuralgia, pain on pressure over the ovaries, with hysterical phenomena.

Inflammatory disorders of the abdomen differ from colic by the presence of fever and tenderness on pressure.

Prognosis. Most favorable. Death is the rarest termination possible.

Treatment. Relief of pain is the first indication, and is best accomplished by a hypodermatic injection of *morphina*, gr. $\frac{1}{6}$ – $\frac{1}{3}$, which has the additional advantage of relaxing the spasm, thereby favoring the action of *purgatives*, which should soon follow. One of the best in colic, no matter from what cause, is—

R. Sodii bicarbonatis.....	gr. viij	
Hydrargyri chloridi mite.....	gr. viij	
Pulv. zingib.....	gr. iij.	M.

After the relief of the pain and free action of the bowels, the cause of the attack should be ascertained and corrected, to prevent future suffering.

For *lead colic*, *morphina*, for the pain; *magnesiæ sulphas*, ℥j, every hour, for the constipation, and *potassii iodidum*, gr. v–x, t. d., to eliminate the metal from the system.

CONSTIPATION.

Synonyms. Intestinal torpor; costiveness.

Definition. A functional inactivity of the intestinal canal, either due to atony of the muscular coat, causing lessened peristalsis, or to a deficiency of intestinal and biliary secretion; characterized by a change in the character, frequency and quantity of the stools.

Causes. Dyspepsia; character of the food; habits of the patient; diseases of the stomach and liver; malaria; lead poisoning; syphilis.

Symptoms. In the normal condition, the majority of persons have *one stool* each day, although it is not to be considered abnormal if more than that number occur.

The *bowels* are moved every *three* or *four days*, with great *straining* and *distress*, the *face* often *flushed*, the *cerebral vessels* *full*.

Or in other cases the bowels may be relieved once a day, but the *stool is small and hard*, causing great pain.

Another group of cases have *frequent stools* during the day, *small and non-formed*, due to retained hardened fæces acting as an irritant upon the rectum.

The change in the character of the stools is soon followed by symptoms of dyspepsia, and in many cases with great distention of the abdomen.

Prognosis. Death never results from functional constipation.

Treatment. The successful treatment depends upon the *removal of the cause* and the *co-operation of the patient*.

First, the patient must have a *regular hour* each day for *going to stool*, and must *remain a sufficient time* to permit a thorough evacuation of the bowels.

Second, the diet must be carefully regulated.

Third, purgative mineral waters or cathartic medicines are to be *used with caution*, their reckless administration often doing more harm than good.

Fourth, either of the following formulæ, aided by the enforcement of the above rules, will give good results:—

R.	Ext. nucis vomicæ.....	gr.	$\frac{1}{4}$	
	Ext. belladonnæ alco.....	gr.	$\frac{1}{4}$	
	Extract aloes aqua.....	gr.	ss	
	Pulv. rhei.....	gr.	j	
	Olei cajuputi.....	gtt.	j.	M.

In pill, at bedtime, and after a week, every second or third night.

R.	Resinæ podophyl.,			
	Ext. physostig.,			
	Ext. belladonnæ alco.,			
	Aloine.....	āā.....	gr.	$\frac{1}{4}$.

In pill, every night, or second or third night.

R.	Tinct. physostig.,			
	Tinct. nucis vomicæ,			
	Tinct. belladonnæ.....	āā.....	gtt.	x
	Tinct. aloes et myrrh.....		gtt.	xxx. M.

At bedtime.

DIARRHŒA.

Synonyms. Enterorrhœa; alvine flux; purging.

Definition. Frequent loose alvine evacuations, without tenesmus; due to functional or organic derangement of the small intestines, produced by causes acting either locally or constitutionally.

Causes. Those acting locally, such as *indigestion, indigestible food, impure food and water, irritating matters* or *secretions* poured into the bowels, or *entozoa*, cause the flux by a direct irritation of the mucous surface.

Those due to constitutional derangement may be secondary to such diseases as *tuberculosis, pyæmia, albuminuria, typhoid fever*, or disturbances of the functions of other organs, giving rise to *vicarious fluxes*.

Forms. Acute and chronic.

Symptoms. Acute diarrhœa presents itself in several varieties, the result of its cause, to wit:—

Feculent diarrhœa. A few hours after meals the patient feels *colicky pains and flatulency*, with a *desire for stool*. There is often *nausea, coated tongue*, but seldom vomiting. The *pain* is generally relieved by the purging which ensues. The *stools* have a *feculent* character, are of brown fluid, containing fæces, often offensive, the color becoming lighter after four or five evacuations. Constitutional symptoms are wanting.

This form is the result of over eating, eating too rapidly, or indigestion of different forms, or worms in the intestinal canal, and patients generally recover in a day or two.

Lienteric diarrhœa. In this form there is, with the frequency of evacuations, a *want of assimilation of food*, which passes through the intestines more or less unaltered. The *stools* are frequent, *mucous or serous*, more or less *covered with bile*, mixed with *undigested food*. In this form the patients emaciate rapidly, owing to the deficient assimilation, the digested portions of the food being hurried on by the irritated bowel. It is usually subacute in its course.

Bilious diarrhœa. The *stools* are frequent, *green or yellow*, with *scalding sensations* at the anus and *gripping pains* in the abdomen. Excessive biliary secretion is the irritating cause.

Any of the above forms may pass into chronic diarrhœa by exciting permanent diseases of the intestines. Diarrhœa due to constitutional causes will be mentioned when speaking of those conditions.

Chronic diarrhœa results from repeated attacks of the acute form, or the result of some cachexia. The *symptoms*, as far as the *stools* are concerned, are much the same as the acute disease, except they are *paler*, whence it has been termed *white flux*; in addition, *dyspeptic* symptoms, *aphthous* condition of the mouth and tongue, *flatulency*,

colic, *emaciation* and *anæmia*. The appetite is at times capricious, again impaired.

Prognosis. Favorable in *feculent* and *bilious* forms; unfavorable in *lienteric* and *chronic* forms when emaciation begins. Diarrhœa occurring as a symptom, the prognosis is controlled by the original disease.

Treatment. *Acute diarrhœa*. If caused by indigestion the *indication* is for a *laxative*; for adults, *tinct. rhei.* or *ol. ricini*, or both; for children between one and two years of age—

R. Pulv. ipecac.....	gr. $\frac{1}{2}$	
Pulv. rhei.....	gr. $\frac{1}{4} - \frac{1}{3}$	
Sodii bicarb.....	gr. ss-ij.	M.

Every four hours until the character of the stools change.

After the irritant is removed, for an adult, *opium* in some form, combined with *kino* or *tannin*; or the following modification of "Squibb's diarrhœa mixture:"—

R. Tinct. opii deodorat.....	f $\frac{3}{4}$ viiss	
Tinct. camphoræ.....	f $\frac{3}{4}$ j	
Tinct. capsici.....	f $\frac{3}{4}$ v	
Chloroformi puræ.....	f $\frac{3}{4}$ iiss	
Spts. vini gallici.....	f $\frac{3}{4}$ j	
Alcoholis.....ad.....	f $\frac{3}{4}$ iv.	M.

SIG.—One teaspoonful, p. r. n.

For children—

R. Bismuth	gr. iij-v	
Cretæ præp.....	gr. v.	M.

Every two hours.

In adults, an *opium* suppository often checks a flux that is uninfluenced by opium internally.

For the *bilious* form—

R. Hydrargyri chlor. mitis.....	gr. $\frac{1}{8}$	
Sodii bicarb.....	gr. ij	
Pulv. opii.....	gr. $\frac{1}{4}$.	M.

In powder, every two or three hours, until eight powders are used, followed by large doses of *bismuth* and *pepsinum*.

In all acute forms *restricted* and *regulated diet* are imperative, *pure milk* with *liquor calcis* being the most suitable.

Chronic diarrhœa. Bismuth, gr. xxx-xl, in milk, every four hours; *Hope's camphor mixture*, every four hours; *cupri sulphas*, gr. $\frac{1}{12}$, *ext. opii*, gr. $\frac{1}{12}$, every four hours; *argenti nitras*, gr. $\frac{1}{2}$, *ext. opii*, gr. $\frac{1}{5}$, every five hours; may all be used with more or less success; when *dry tongue* and *great flatulency*, use—

R.	Ol. terebinthini.....	f 3 j	
	Ol. amygdal. express.....	f 3 ss	
	Tinct. opii.....	f 3 ij	
	Mucil. acaciæ.....	f 3 v	
	Aq. lauro-cerasi.....	f 3 ss.	M.

SIG.—f 3 j every three or four hours.

The diet should be nutritious in character, and moderate stimulants are indicated. Activity of the skin and kidneys should be encouraged.

CATARRHAL ENTERITIS.

Synonyms. Ileo-colitis; acute diarrhœa; inflammation of the bowels.

Definition. A catarrhal inflammation of the mucous membrane of the small intestines; characterized by fever, pain, tenderness and looseness of the bowels. When the catarrh is limited to the duodenum, it is termed *duodenitis*, the symptoms being of a different character.

Pathological Anatomy. There first ensues *hyperæmia* of the mucous membrane and intestinal glands, manifested by *redness*, *swelling* and *œdema*; this is followed by *increased secretion* and an *overgrowth* and *desquamation* of the epithelium, together with a copious *generation of young cells*. As a result of the hyperæmia, rupture of the capillaries and extravasation of blood often occur.

The swollen glands show a strong tendency to ulcerate. This catarrhal process may involve the entire tube or be limited to portions of it.

Causes. Improper and indigestible food; summer temperature and exposure to cold and wet, while perspiring.

Symptoms. Begins with *languor*, followed by *chilliness* and *fever*, the temperature ranging at 102° – 103° , this is followed by *pain*, colicky in character, situated above the umbilicus, localized *tenderness* and *loose evacuations*. *Nausea* and *vomiting* often occur. The *stools* contain but *little fecal matter*, are *yellow* or *greenish-yellow* in

color, mixed with *undigested food*; if the stools are numerous, they become whitish and watery, the so-called "*rice-water*" discharges. The appetite is impaired, and this, with the want of assimilation and great waste, soon produce extreme *weakness* and *emaciation*, which is always more marked in children.

Duration. In mild cases, four or five days; severe cases continue more or less marked, for a week or two.

Diagnosis. From *colic*, by the absence of tenderness and fever, and presence of constipation and its paroxysmal character.

From *typhoid fever*, by the absence of prodromes, characteristic temperature record and eruption.

For points of distinction from *dysentery* or *peritonitis*, see those affections.

Prognosis. Favorable, if early and proper treatment are obtained.

Treatment. *Rest the bowels* by a restricted diet, to wit: milk and lime water, or weak mutton or chicken soups, with well boiled rice added.

Keep the patient quiet in bed, a difficult matter in the case of children.

For *adults*, *opium* is the remedy, in doses to control the symptoms; mild cases do well with—

R.	Ext. opii.....	gr. $\frac{1}{4}$ - $\frac{1}{2}$	
	Camphoræ	gr. iij.	M.
	In pill, every three hours.		

Or—

R.	Tinct. opii deodorat.....	gtt. x	
	Liq. potassii citrat.....	ʒ iij.	M.
	Every four hours.		

The strength and the frequency of administration of either of these formulæ must be governed by the severity of the attack.

For *children*—

R.	Tinct. opii deodorat.....	gtt. j	
	Bismuth. subnit.....	gr. v	
	Mist. cretæ.....	f ʒj.	M.
	Every four hours, for a child of one year.		

If the case shows the least tendency to linger, the *acid* treatment

should be substituted for the above, the best of which is "Hope's Camphor Mixture," the formula being—

R.	Acidi nitrosi.....	f℥j	
	Tinct. opii.....	gtt. xl	
	Aquæ camphoræ.....	f℥ viij.	M.

The dose ranging from f℥j to f℥ ij, according to the age.

Acidum sulphuricum dilutum may be substituted for the acidum nitrosum in the above formula.

Locally, poultices, warm fomentations, or *ung. belladonnæ* or *oleum camphorat.*, give great relief.

CROUPOUS ENTERITIS.

Synonym. Membranous enteritis.

Definition. A croupous inflammation of the mucous membrane of the small intestines; characterized by tenderness, paroxysmal pain, moderate fever, and the formation and discharge of membranous shreds or casts.

Causes. A disease of adult life. The female sex more liable than the male, and neuralgic, nervous, hysterical or hypochondriacal subjects are more subject to it than are other types.

A peculiar state of the nervous system seems necessary to its production.

Pathological Anatomy. A subacute inflammation of the small intestines, during which the mucous membrane becomes covered with a whitish or grayish-white, firmly adherent, membranous deposit, cemented together by a coagulable exudation, and prolonged by rootlets from its under surface into the intestinal follicles.

Symptoms. Begins by *feverishness*, feeling of *soreness* and *distention* of the abdomen; these are followed by *pains* of a colicky character, severe and depressing, felt around the *umbilicus*, continuing for half an hour, an hour or longer, and after a longer or shorter interval occurring again; these phenomena continue for a day or two, when *looseness of the bowels*, with distressing *pain* and *tenesmus* occur, the *stools* containing *mucus*, with or without *blood*, and *shreds of membrane* or *cylindrical casts of the bowel*. Great relief is then experienced, although a *feeling of rawness* or *soreness* persists for a day or two.

Preceding the local manifestations of the disease are attacks of hysteria, hypochondriasis, neuralgia, nervousness or excitability.

The paroxysms recur at intervals of a week or two, or after several months; as long an interval as three years between attacks is recorded.

Diagnosis. *Peritonitis* may be suspected until the characteristic stools occur.

Dysentery is excluded when the shreds and casts of membrane appear.

Prognosis. Favorable as to life, but one of the most difficult of diseases to eradicate.

Treatment. The *diet* must be such as contains but a minimum of fecal-forming matter.

For the *pain* and *suffering*, *opium* in some form is indicated, the most effective being a hypodermatic injection of *morphina*.

For *constipation* during a paroxysm, an emulsion of *oleum ricini* and *terebinthina* is of benefit. To prevent a return of the paroxysms either *liq. potassii arsenitis*, gtt. j-ij, t. d., or *hydrargyri chloridum corrosivum*, gr. ¹, t. d., with a course of *oleum morrhua*, seems to answer in the majority of cases. Prof. Da Costa speaks highly of *pix liquida* in some form, as an alterative to the mucous membrane.

Under no circumstances must the bowels become constipated.

CHOLERA MORBUS.

Synonyms. Sporadic cholera; English cholera; bilious cholera.

Definition. An acute catarrhal inflammation of the mucous membrane of the stomach and intestines, of *sudden* onset; characterized by violent abdominal pains, incessant vomiting and purging, cold surface, rapid, feeble pulse, spasmodic contractions of the muscles of the abdomen and extremities, and prostration.

Causes. A disease of summer and early autumn, climatic influence being an important factor. Irritants of all kinds, unripe fruits and vegetables, and fermentation of food.

Pathological Anatomy. Cases in which death has occurred within a few hours present no pathological changes.

Generally, however, the gastro-intestinal mucous membrane is congested and denuded of epithelium; the Solitary and Peyerian

glands are swollen and prominent. The blood is thick, and dark in color; the kidneys are enlarged and congested; and in prolonged cases there are appearances of granular changes in the muscular system.

Symptoms. Onset sudden and violent, and unfortunately, generally *after midnight*, with chilliness, *intense nausea, vomiting and purging*, accompanied with distressing burning or tearing abdominal *pains or colic*. The *vomited matter* at first consists of the ordinary contents of the stomach, and the *stools* of ordinary *fæces*, but soon the *discharges* by vomit and stool are *liquid, whitish* or of a *green or yellowish* tint; if the attack is severe or protracted the discharges partake of the "*rice-water*" character. The patient is rapidly *emaciated* and *reduced* in strength, the body shrinks, the *surface cold* and covered with a *clammy sweat*, and the *pulse feeble*. *Intense thirst* is present, and when drink is given it is at once rejected.

Aggravating the distress of the patient are *severe cramps* of the muscles, and especially those of the calves, and of the flexors of the thighs, forearms, fingers and toes.

Termination. *Mild cases* often terminate favorably without treatment, the patient able to be around in a day or two, although weak.

Severe cases, the vomiting and purging cease after some hours, but the patient remains weak, with an irritable stomach and bowels for a week or two.

Grave cases, the true cholera type, recover from the prostration very gradually; reaction coming on slowly and usually passes into a typhoid condition of some weeks' duration.

Diagnosis. *Asiatic cholera* and cholera morbus are easily confounded during an epidemic of the former, and there are no positive points of discrimination, unless the *comma bacilli* of Koch are proven to be always in the true cholera stools.

Irritant poisons, such as tartar emetic, elaterium, or other substances, cause vomiting and purging, similar to cholera morbus, and are only discriminated from it by the history.

Prognosis. In the majority of cases favorable. The mortality is about five per cent.

Treatment. *At once*, regardless of the cause, a hypodermatic injection of *morphinæ sulph.*, gr. $\frac{1}{8}$ – $\frac{1}{3}$, and *atropinæ sulph.*, gr. $\frac{1}{20}$, to be repeated in half an hour if no improvement; for patients who

object to the hypodermatic mode, *opium* in some form by the mouth or rectum, giving the preference to the liquid preparations.

Camphora and *opium* combined often act well, or the diarrhœa mixture mentioned on page 71, and if much depression, small doses of *brandy* or *dry champagne*.

The *intense thirst* must not be gratified by the use of liquids, but small *pellets of ice* by the stomach are grateful.

If the vomiting and purging continue, make use of—

R.	Bismuth subnit.....	gr. xx	
	Acid. carbol.....	gr. ss	
	Glycerini.....	gtt. xx	
	Aquæ.....ad.....	f℥iv.	M.

Every hour or two.

Dr. Hartshorne strongly recommends—

R.	Spts. ammon. aromat.....	f℥j	
	Magnes. optim.....	f℥j	
	Aq. menth. pip.....	f℥iv.	M.

SIG.—℥j every twenty minutes.

If the case is seen early, and if the diarrhœa is copious, he adds *tinct. opii camph.*, f℥iv, to the mixture.

The closer the case approaches the true cholera type, the more severe are the *muscular cramps*, and their treatment is indicated.

Prof. Da Costa suggests—

R.	Chloral.....	℥iv	
	Cosmoline.....	℥j.	M.

To be rubbed over the affected muscles.

Dr. Bartholow suggests—

R.	Chloral.....	℥iij	
	Morphinæ sulph.....	gr. iv	
	Aquæ.....	f℥j.	M.

SIG.—*Twenty minims*, hypodermatically.

Locally, *sinapis* in the form of poultices or the dry powder, should be applied from the onset.

The after treatment depends upon the symptoms; generally an *acid mixture* and a *regulated diet*, with tonic doses of *quinina*, are indicated.

ENTERO-COLITIS.

Synonym. Inflammatory diarrhœa.

Definition. A catarrhal inflammation of the lower portion of the small—ilium—and the upper portion of the large intestines, with a great tendency to ulceration of the intestinal glands if the catarrh becomes chronic; characterized by moderate fever, nausea, vomiting, diarrhœa, swollen abdomen and emaciation.

Causes. Improper and indigestible food; summer temperature; impure air; uncleanness; exposure to cold and damp air.

Forms. Acute and chronic.

Pathological Anatomy. *Acute variety;* hyperæmia, swelling, œdema and softening of the mucous membrane of the lower portion of the small and the upper portion of the large intestines, with hyperplasia of the intestinal follicles, their excretory orifices enlarged and tumid, readily distinguished as grayish or blackish points in the middle of the glands; the patches of Peyer are also enlarged, tumefied and project above the level of the surrounding mucous membrane, the orifices of the follicles appearing as dark points; these patches often have an ulcerated appearance, but upon close examination such is found not to be the case.

Chronic variety; the thickening and infiltration has extended to the submucous and muscular coats, followed by induration of the tissues, so that the walls of the intestines are often abnormally rigid. Ulceration occurs, which extends through the entire thickness of the membrane. "These ulcers, when isolated, are from one to one and a half lines in diameter, oval or circular in shape, and either have sharp-cut edges, as though the piece of mucous membrane had been cut out with a punch, or the mucous membrane bounding them is undermined." The small ulcers often coalesce, so that large, irregular ulcerated patches are formed, having for their base the submucous or muscular coats, and have a grayish-white color.

The mesenteric glands are enlarged, but seldom, if ever, undergo ulceration.

Symptoms. *Acute form;* may develop slowly, with restlessness and fretfulness, or suddenly with *feverishness, loss of appetite, thirst, nausea, moderate vomiting, abdominal pain;* or *diarrhœa* may be the first indication of illness on the part of the child. Regardless of the character of the onset, the *stools* soon present the characteristic appearance; they are *semi-fluid, heterogeneous, greenish, acid, mixed with*

yellowish fragments of ordinary fæces, and *undigested casein*, termed the "chopped spinach" stools. The *abdomen* is *enlarged* and *tender*.

Emaciation is marked in proportion to the severity of the symptoms, in marked cases the child is reduced to a condition of the greatest debility within a very few days.

Chronic form; usually follows the acute form, the character of the symptoms being less severe, but decidedly persistent, the strength fails, the temper is very irritable, the complexion grows dark, sallow and unhealthy, the skin dry and harsh, and in consequence of the marked emaciation, either hangs in folds around the shrunken limbs, or is drawn tightly over the joints; the abdomen is enlarged and tender, the stools numbering from six to a dozen during the day and night, consisting of the products of an imperfect digestion mixed with mucus, serum, pus, and oftentimes blood, having a semi-fluid consistency, and an extremely offensive odor.

Duration. *Acute*, from ten days to about two weeks, subsiding gradually; *chronic*, from one to two or three months, or even longer.

Diagnosis. The acute form can hardly be mistaken for any other condition, if the characteristic stools and other abdominal symptoms are present. The chronic form has been frequently mistaken for diarrhœa of tuberculosis, an error that can hardly occur if a physical examination of the chest has been made.

Prognosis. Always a very serious malady, and proves fatal if it attacks the weak during midsummer, or when surrounded by unfavorable hygienic conditions; in vigorous children, who have passed through their first dentition, the prognosis is quite favorable.

Treatment. For the *acute form*, restricting the amount of food for the first few days is of importance. Fresh, pure air, cleanliness and rest are also of importance.

Any one of the following formulæ may be used with advantage:—

R.	Calci carbon. precip.....	ʒj	
	Tinct. opii camph.....	fʒss	
	Tinct. lavendulæ comp.....	fʒij	
	Syr. gallæ aromat.....	fʒiss	
	Syr. acaciæ.....	fʒj.	M.

SIG.—Teaspoonful, repeated every hour or two.

Or—	R.	Tinct. opii camph.....	fʒijj	
		Tinct. catechu comp.....	fʒiv	
		Misturæ cretæ.....	fʒix.	M.

SIG.—One or two teaspoonfuls, every hour or two.

- Or— R. Bismuth subnit..... ʒ iv
 Pulv. acaciæ,
 Sacc. alb.....āā..... q. s.
 Syr. gallæ aromat f ʒ j
 Spts. vini gallici..... f ʒ ij
 Aquæad..... f ʒ ij. M.
- SIG.—One or two teaspoonfuls, every two hours.
- Or— R. Pulv. ipecac..... gr. ¼
 Bismuth subnit..... gr. v
 Cretæ præp..... gr. iij. M.
- SIG.—After each stool.

Locally, warmth to the abdomen, with mustard, turpentine stupes or the *spice poultice*, made as follows: *cloves, allspice, cinnamon and anise seeds*, each half an ounce, pounded (not powdered) in a mortar, and placed between two pieces of coarse flannel about six inches square and quilted in; soak this for a few minutes in hot brandy or hot whisky and water, equal parts, and apply to the abdomen, heating again as it becomes cool.

For *chronic form*; carefully regulated diet, rest and fresh air, and one of the following formulæ:—

- R. Acidi carbolic..... gr. ¼-½
 Tincturæ iodi..... gtt. j-ij
 Aquæ menthæ..... ʒ j. M.
- SIG.—Every three or four hours.
- Or— R. Tinct. calumbæ..... f ʒ ij
 Liq. ferri nitratis..... ℥ xxvij
 Syrupi zingib..... f ʒ ij. M.
- SIG.—One or two teaspoonfuls, according to age, every three or four hours.

CHOLERA INFANTUM.

Synonyms. Choleriform diarrhœa; summer complaint.

Definition. An acute catarrhal inflammation of the mucous membrane of the stomach and intestines, together with an irritation of the sympathetic nervous system, occurring in children during their first dentition; characterized by severe colicky pains, vomiting, purging, febrile reaction and prostration.

Cause. Age; bad hygiene, or as it is now entitled, “civic malaria;” continuous high temperature; improper food; dentition; constitutional as in the feeble, delicate, nervous or irritable.

Pathological Anatomy. Resembles closely, if not identical with the phenomena of catarrhal gastritis and enteritis, together with a powerful irritation of the fibres of the sympathetic system.

Symptoms. The onset is *sudden* in a child previously well, or in a child suffering from a bowel affection.

Begins with *vomiting*, *purging*, abdominal *pain*, *fever*, *rapid pulse* and *intense thirst*.

The *vomited matter* is partly digested food, sero-mucus, and finally bilious, and is accompanied with distressing *retching*. The *thirst* is a marked phenomena of the disease, and ice and water will be taken incessantly, although rejected only a few moments after.

The *stools* are first partly fecal, but soon watery or serous, soaking the clothing, leaving a faint greenish or yellowish stain; their odor is musty, at times fetid; their number is from ten to twenty in the day.

Pains precede the vomiting and purging, colicky in character.

The *fever* begins at once, the temperature varying from 101° to 105° , with morning remissions. The *pulse* is rapid and feeble, ranging from 130 to 160.

These symptoms continue but a few hours, before *rapid wasting* ensues, the body shrinks, the eyes are sunken and partly closed, the mouth partly open, the lips dry, cracked and bleeding. The child, at first *irritable* and *restless*, passes into a semi-comatose condition, the pulse becoming more and more feeble, the surface has a clammy coldness, the contracted pupils not responding to light, and the stupor deepens, death soon following, or the symptoms slowly ameliorate, convalescence being slow and tedious.

Diagnosis. The *entero-colitis* or inflammatory diarrhœa of childhood is constantly being mistaken for cholera infantum. The symptoms of the former are: gradual onset, with *fretfulness*, *loss of appetite*, *feverishness*, *nausea*, and moderate *vomiting*, soon followed by *diarrhœa*, the stools being semi-fluid, greenish, mixed with yellowish particles of fæces and undigested casein, with a sour odor, the "chopped spinach" stools, the *abdomen* distended and *tender*, moderate *fever* and *thirst*, and having a *duration* of about two weeks.

Prognosis. Difficult to predict the result, and so care must be used in giving a prognosis. The duration of the choleraic symptoms is short, under five days, but relapses are common, and the sequelæ are protracted.

Treatment. The first indication is to arrest the vomiting and purging, for which use—

R.	Bismuth subnit.....	gr. v-x	
	Mucil. acaciæ.....	ʒ ss	
	Acidi carbolic.....	gr. $\frac{1}{2}$ - $\frac{1}{6}$	
	Tinct. opii deodorat.....	gtt. j	
	Mist. cretæ.....	ʒ iss.	M.

Every two hours for a child between one and two years.

Or—

R.	Hydrargyri chlor. mit.....	gr. $\frac{1}{20}$	
	Bismuth subnit.....	gr. ij-v.	M.

SIG.—A powder every half hour.

If these fail, or the stomach will not retain them, *tinct. opii* may be given by the rectum, with *zinci sulph.* and *amylum*.

Cases that have resisted other remedies have rapidly improved under the following :—

R.	Tinct. verat. alb.....	f ʒ ij	
	Morphinæ acetat.....	gr. ij	
	Spts. vini gallici.....	f ʒ ij.	M.

Et adde ʒ j to

Aquæ calcis,			
Aquæ menthæ.....	āā.....	f ʒ j.	M.

SIG.—One teaspoonful, repeated every hour, if needed.

The diet must be restricted in amount : for the first day or two gtt. v-xxx *brandy* in *barley water* at frequent intervals will be all that is required.

For *fever*, *quinina* or *aconitum* are indicated.

For *depression*, regulated nursing or feeding, every two hours, and water or ice to quench the intense thirst, and *cognac brandy*, gtt. x-xxx, every hour or two, in water.

Locally ; over epigastrium, mustard or a spice poultice, or turpentine stupes.

If the *nervous symptoms* become aggravated, small dose of *potassii bromidum*, or *valerian*, which “ reduces the reflex excitability, motility and sensibility,” is indicated.

ACUTE DYSENTERY.

Synonyms. Colitis ; colonitis ; ulcerative colitis ; bloody flux.

Definition. An acute inflammation of the mucous membrane of the large intestines, either catarrhal or croupous in character ; charac-

terized by fever, tormina, tenesmus and frequent, small, mucous and bloody stools.

It occurs either in the *sporadic*, *endemic* or *epidemic* form.

Causes. *Sporadic* and *endemic dysentery* is caused most commonly by atmospheric changes, to wit, hot days and cool nights ; also from malarial attacks, and rarely, errors in diet.

Epidemic dysentery prevails in armies, jails, and tenement houses, propagated by decomposition of dysenteric stools, and the unfavorable hygienic surroundings.

It is not contagious.

Pathological Anatomy. *Sporadic dysentery* is catarrhal in character ; congestion, swelling and œdema of the mucous membrane and sub-mucous tissue, with an over-production of mucus ; the follicles are enlarged, from retention of their contents, the result of the swelling ; the congested vessels often rupture ; the mucous membrane softens in patches, and is detached, forming ulcers. Recovery follows, if the destruction of tissue is small, smooth cicatrices, minus gland structure, marking the site.

Epidemic dysentery is croupous in character ; begins with intense congestion, swelling, and œdema of the mucous and sub-mucous tissue, with extravasations of blood and the whole mucous membrane covered with a firm fibrinous exudation ; the mucous membrane softens and sloughs, leaving large ulcers and gangrenous spots. If recovery occur, large cicatrices form, which narrow the calibre of the intestinal tube.

The mesenteric glands enlarge, soften, and abscesses form in them ; the liver becomes the seat of small abscesses, from embolic obstruction of the radicles of the portal vein ; the heart muscles are flabby and more or less fatty.

Symptoms. *Catarrhal form* begins gradually, with *diarrhœa*, *loss of appetite*, *nausea*, and *very slight fever*, which continues for two or three days, when the *true dysenteric* symptoms set in, to wit, *pain* on pressure along the transverse and descending colon, *tormina* or *colicky pains* about the umbilicus, *burning pain* in the rectum, with the sensation of the presence of a foreign body and a constant desire to expel it, or *tenesmus*, which is almost constant ; the *stools* for the first day or two contain more or less fecal matter, but they soon change to a *grayish, tough, transparent mucus*, containing more or less *blood* and *pus* ; during the *tormina*, *nausea* and *vomiting* may

occur; the urine is scanty and high colored; the number of stools range from five to twenty or more in the twenty-four hours.

The *duration* is about *one week*, the patient being much *emaciated* and *enfeebled*.

The *croupous* or *epidemic form* sets in suddenly, the *stools* being more frequent, containing more *blood* and *pus*, with *patches of membrane*, even *casts of the bowel*, together with more or less *gangrenous mucous membrane*; *nausea*, *vomiting*, and great *prostration*, *cold skin*, *feeble pulse* and *emaciation* with *anxious expression*, the *odor* surrounding the patient being *fetid*.

The *duration* of the grave symptoms is three or four days, when collapse and death occur, or slow convalescence begins, continuing for weeks.

Complications. *Peritonitis*; *hepatic abscesses*; *phlebitis* of the intestinal veins; *intestinal perforation*.

Diagnosis. *Enteritis* lacks the tenesmus and characteristic stools.

Peritonitis, when idiopathic, shows higher temperature, greater tenderness and constipation.

Prognosis. *Catarrhal form* favorable. *Croupous form*, the prognosis is always grave, for if recovery does occur the bowel may be crippled, from loss of structure, or from narrowing of its calibre, the result of cicatrices.

Treatment. Emaciation being rapid, the diet must be of the most nourishing character, to which stimulus should be added if much prostration occur.

The most common treatment is *opium*, combined with one or more *astringents*, to wit:—

R.	Ext. opii.....	gr. ss	
	Plumbi acetat.....	gr. ij.	M.
Every two hours; or—			

R.	Pulv. opii	gr. ss	
	Plumbi acetat.....	gr. ij	
	Pulv. ipecac.....	gr. j.	M.
Every two hours; or—			

R.	Pulv. ipecac et opii.....	gr. x	
	Bismuth subnit.....	gr. xx.	M.
Every two hours.			

If the case is seen early the very best prescription possible is—

R.	Magnesii sulph.....	ʒj	
	Acid. sulph. dil.....	℥v	
	Tinct. opii deodorat.....	℥x	
	Aquæ menth.....	ʒij.	M.

Every two or three hours, until fæces appear in the stools, when small doses of *opium* and *quinina* may be used.

Ipecacuanha in gr. xx–xl, is largely used in the first stages of dysentery, until the characteristic ipecac stools appear; the first doses being often rapidly rejected by the stomach, the treatment is difficult to pursue outside of hospital practice; but of its efficacy in many cases there can be no doubt.

Dr. Loomis speaks strongly of *Ipecacuanha*, gr. ¼ every half-hour, with sufficient opium to secure quietness.

Ringer recommends *hydrargyri chloridum corrosivum*, gr. $\frac{1}{100}$, every hour or two, which “rarely fails to free the stools from blood and slime, although in some cases a diarrhœa of a different character may continue for a short time longer.”

In children the following combination is efficacious :—

R.	Pulv. ipecacuanha.....	gr. ¼	
	Bismuth subnit.....	gr. v	
	Crætæ præp.....	gr. iij.	M.

SIG.—Every two hours.

The patient should be confined to bed in even the mildest attacks, and the stools removed at once and *disinfected*.

Washing out the rectum with either tepid, hot, cold or iced water, as suggested by Prof. DaCosta, adds greatly to the patient's comfort and to the decrease of the inflammatory process.

TYPHLITIS.

Synonyms. Inflammation of the cæcum; catarrh of the cæcum.

Definition. A catarrhal inflammation of the mucous membrane of the cæcum and ascending colon; characterized by pain, tenderness, constipation, and in certain cases a characteristic vomiting.

Causes. In a majority of cases *mechanical*, from the lodgment of seeds or hardened fæces.

Pathological Anatomy. Similar to the catarrhal inflammation of dysentery.

Symptoms. *Pain and tenderness* in the right iliac fossa and along the ascending colon, with some *prominence* of this region; the *bowels* are usually *constipated*, or small liquid stools may occur from time to time, due to the accumulation of hardened *fæces* in the sacculated periphery of the *cæcum*, leaving a central canal through which the liquid contents of the upper bowel can pass.

In *severe cases*, "the local *pain, tenderness* and *swelling* are greater, there are *impaction* of *fæces* and *no movements*. There are decided *fever, restlessness*, and also *nausea* and *vomiting*. The *vomited matters*, at first the contents of the stomach, then the duodenum, with bilious matter, and ultimately, if the *impaction* persists, of material having the odor of *fæces*. With these symptoms occur *great depression of the vital powers*. *Peritonitis* is finally developed by contiguity of tissue or by rupture of the bowel."

Duration. The *mild form* lasts about one week. The *severe form* may terminate in subacute peritonitis, continuing about two weeks.

Diagnosis. The *mild form* is distinguished from other intestinal affections, by the localized pain, tenderness and prominence, and the constipation.

The *severe form* can only be distinguished from the other forms of *intestinal obstruction* by the history of the case and attack, and the results of treatment.

Prognosis. *Mild form* favorable. *Severe form* grave, although not necessarily fatal.

Treatment. The patient should be kept in bed, and placed on a strictly milk diet.

In *mild cases*, act upon the bowels, with either *oleum ricini* or *magnesiæ sulphas* in small doses, followed by an *opium* influence, to be maintained until convalescence is well pronounced.

In *severe cases*, begin an *opium* influence at once, by hypodermatic injections of *morphina* guarded with *atropina*, continued until all symptoms of inflammation have subsided, when attempts to remove the accumulated *fæces* may be made by *irrigation of the bowel* with warm soapsuds, and the cautious administration of *magnesiæ sulphas* in drachm doses, every two hours.

Locally. Leeches over the *cæcum* followed by hot fomentations or ice bags, or cold compresses.

PERITYPHLITIS.

Synonym. Perityphlitic abscess.

Definition. An acute inflammation of the connective tissue around the cæcum, tending to the formation of an abscess; characterized by pain, swelling, and febrile reaction.

Causes. Injuries to the abdomen over the cæcum; and also extension of the inflammation from the cæcum by perforation. Often occurs with typhlitis.

Symptoms. Begins with a *feeling of weight, soreness* and *paroxysms of acute pain* extending into the hip, thigh and abdomen, with the development of a *hard swelling* in the *right iliac region*. Its special tendency is toward *suppuration*, which is announced by *irregular chills, feverishness*, and *sweats*, and a feeling of *tension* and *throbbing*. Its development is slow, and if associated with *typhlitis* the symptoms of that affection are added.

Diagnosis. Differs from *typhlitis* by the absence of the colicky pains, dyspeptic symptoms, costive bowels and tympanites preceding the development of a tumor; in perityphlitis the tumor is present with the development of the symptoms.

Psoas abscess is not associated with intestinal symptoms, and the discharge is free from a fecal odor. *Renal* and *ovarian* tumors should not be sources of error. The possibility of hernial tumors must not be overlooked.

Treatment. If not associated with typhlitis, the treatment is to allay the inflammation in the first stage, by either *ice, locally*, or freely *painting* with *tinct. iodi*; if suppuration is evident, hasten by *poultices*, and follow by evacuation of the pus with the *aspirator* or a *free opening*, conjoined with the use of *opium* and *quinina*.

PROCTITIS.

Synonyms. Catarrh of the rectum; dysentery; rectitis.

Definition. A catarrhal inflammation of the mucous membrane of the rectum and anus; characterized by pain, tenesmus and frequent stools of hardened feces, or of mucus, pus and blood.

Causes. Chief cause constipation; also sitting on damp ground or stone steps; habitual use of enemata or of purgatives; diseases of the liver.

Pathological Anatomy. Similar to those occurring in catarrhal dysentery.

Symptoms. Uneasy sensations and *burning in the rectum*, with a constant desire for stool, or *tenesmus*, often so severe as to cause a *prolapse of the mucous membrane*. The stools may be either *hardened fæces* or *scybalæ* from the distended colon, which cause *intense pain* when they reach the rectum; or the stools may be of *mucus*, *muco-pus*, or *bloody or blood-streaked*. Generally there are present *nausea*, especially during the *tenesmus*, *headache*, *feverishness* and *malaise*. In severe cases there is *strangury*, and with the *tenesmus*, *straining with urination*.

If the case be protracted and severe, inflammation of the connective tissue around the rectum occurs, causing *periproctitis*, which usually terminates in various kinds of fistulæ.

Complications. Periproctitis; peritonitis; hepatic abscesses.

Diagnosis. In *males*, the disease cannot be confounded with any other affection, save, perhaps, hemorrhoids. In *females*, displacements of the uterus may somewhat simulate the symptoms of proctitis.

Prognosis. Uncomplicated cases favorable. Either of the complications adds greatly to the gravity of the affection.

Treatment. In cases due to constipation the chief indication is to empty the bowels, for which the *magnesia mixture* mentioned for dysentery is the most suitable remedy; after which *emollient enemata*, with *opium*, are indicated. *Irrigation* of the bowel with warm water once or twice daily assists in the liquefaction of the hardened fæces.

Cases other than those due to constipation, *emollient enemata* and *opium*, one of the best being—

R.	Ol. olivæ.....	℥ ij	
	Tinct. opii deodorat.....	℥ xv.	M.
	Every three or four hours.		

If symptoms of *periproctitis* occur, use *ice* to the parts, and if supuration ensue, *evacuation* by a free opening and *quinina*.

INTESTINAL OBSTRUCTION.

Synonyms. Intestinal occlusion; strangulated hernia; invagination; intestinal stricture.

Definition. A sudden or gradual closure of the intestinal canal;

characterized by pain, nausea, vomiting, constipation, and finally collapse.

Causes. The numerous causes are arranged as follows :—

1. *Accumulations within the bowel*, of hardened fæces, or foreign bodies.
2. *Strictures*, the result of cancer, ulceration, or cicatrices.
3. *Pressure against the bowel*, from peritoneal adhesions, tumors, and abnormal growths.
4. *Strangulations*, due to the numerous forms of hernia.
5. *Invagination* or intussusception, the most common.
6. *Twisting*, volvulus or rotation of the bowel.

Pathological Anatomy. *Invagination* is the only form calling for special description. It is usually caused by the lower portion of the ileum slipping down into the cæcum, as the finger of a glove might be invaginated, causing thus an actual mechanical obstruction; this is produced by a spasm of the ileum, whereby its calibre is greatly diminished, thus permitting its descent into the lower bowel. Resulting from this occlusion or compression, are congestion, inflammation, with secondary constitutional reaction and death, or more rarely the invaginated bowel sloughs off, and is voided by stool, union taking place at its site and recovery following.

Symptoms. The onset of the symptoms may be either *sudden* or *gradual*, and are as follows :—

Constipation, with more or less severe *colicky pains*, not relieved by either purgatives or injections; *feeling of weight* and *soreness*, with *distention* of the abdomen and *nausea* and *vomiting*; the symptoms all grow more pronounced, the *pain* becoming *violent*, *tenderness* in limited areas, the *vomiting* becoming *stercoraceous*, the abdomen hard and tense, the *eyes sunken*, the *pulse quick* and *feeble*, the *skin cold* and covered with a clammy sweat. The above continue more or less pronounced for a week or ten days, when collapse and death occur, or more rarely gradual return to health.

Cases occur rarely in which small, fecal, muco-purulent stools containing more or less blood exist, instead of constipation.

Diagnosis. One of the most difficult, and can only be solved by a careful study of the case along with the different causes producing the affection. The site of the occlusion can rarely be determined positively.

Intestinal obstruction may be mistaken for *intestinal colic*, *hernia*, *enteritis*, *peritonitis*, *hepatic* or *renal colic*.

Prognosis. Always grave, but guided by the cause. *Impacted fæces* favorable. *Invagination* less favorable, but recoveries occur; the longer the symptoms continue, the more favorable the outlook. *Strangulations* unfavorable, but many recoveries recorded. *Strictures*, due to cancer, cicatrized ulcers and the like, are the most unfavorable.

Treatment. Stop all forms of purgatives as soon as the diagnosis of obstruction is determined.

Opium is indicated in all forms, and is best administered in the form of *morphina*, combined with small doses of *atropina*, hypodermatically.

The author has seen the most brilliant results follow the plan of *washing out the stomach* as suggested by Küssmaul.

Cases resulting from *impacted fæces* are rapidly cured by the above plan combined with *irrigation* of the lower bowels with tepid soap-suds.

If *invagination*, raising the buttocks and lowering the chest, and repeated *injections* of *warmed oil*, are recommended.

Distention of the bowel by *pumping air* through long rectal tubes, or disengaging *carbonic acid gas* in the bowel, by first injecting a solution of *sodii bicarbonas*, and follow this with a solution of *acidum tartaricum*, about one drachm of each, pressure being made against the anus, to prevent escape; but the danger of rupture of the bowel must not be overlooked.

Flatulent distention can be removed by the long *aspirator* needle.

Laparotomy is no doubt the operation of the future, when our means of diagnosing the location of the trouble is more perfect.

The *nutrition* of the patient is best attained by injections of either peptonized foods or defibrinated blood, or both.

INTESTINAL PARASITES.

TAPEWORMS.

Varieties. *Tænia solium*; *Tænia saginata*; *Bothriocephalus latus*.

Causes. The *Tænia solium*, the "armed tapeworm," is the most common in this country. It is derived from the embryos contained in *pork*, known as the *cysticercus cellulosus*.

The *Tænia saginata*, the "unarmed tapeworm," a not uncommon variety, is derived from the embryos contained in *beef*, known as *cysticercus bovis*.

The *Bothriocephalus latus*, also an "unarmed tapeworm," the largest parasite infesting man, is supposed to be derived from an embryo found in *fish*.

The embryo or ova is introduced into the intestinal canal with the food and drink. The parasite reaches its final growth after its entrance into the intestines.

Those handling fresh meats or eating uncooked animal food are most liable to be affected.

Uncleanliness is also an important factor.

Description. The *tænia solium* is from six to thirty feet in length, has a globular head, or scolex, a slender neck connecting its numerous *flat segments* or *joints*. The head, or scolex, measures about $\frac{1}{40}$ of an inch, has a double circle of hooklets,—whence the term "armed tapeworm,"—and is provided with from two to four suckers. The segments or joints (*strobila*) are flat, and vary from one-eighth to one-half an inch in length, and each contain both male and female sexual organs, the uterus being a long, numerous branched tube, in which the ova develop; the ova measure about $\frac{1}{1700}$ of an inch in diameter. An ordinary tapeworm contains some five million ova.

The parasite is firmly imbedded in the mucous membrane of the upper third of the small intestines by its hooklets and suckers.

The lower or terminal *segments* represent the adult and complete animal, and are termed the *proglottides*, which separate from the parasite and are discharged either alone or with the *fæces*.

The *tænia saginata* is from ten to forty feet in length, has a rounded or oval-shaped head, measures about $\frac{1}{10}$ of an inch and has four strong and prominent suckers, but *no* hooklets,—whence the term

“unarmed tapeworm;” the neck is short and thick and the *segments* are larger, stronger and thicker than those of the *T. solium*.

The *Bothriocephalus latus* is the largest of the three Cestoda, the length ranging from fifteen to sixty feet, the head oval, measuring about $\frac{1}{10}$ of an inch, a short neck, the segments or joints being nearly three times as broad as they are long. Its color is a dull, bluish-gray. Zoologically considered, this variety is not a true tapeworm.

Symptoms. Not unfrequently a *tænia* produces no symptoms whatever.

Usually, however, there are *colicky pains* throughout the abdomen, *inordinate appetite*, *disorders of digestion*, *emaciation*, *constipation*, attacks of *cardiac palpitation*, *faintness*, disorders of the special senses and *pruritus* of the anus and nose. Any or all of these symptoms may be present.

A large meal will often remove the majority of the symptoms present.

In a large number of cases the discovery of the *segments* is the first intimation of the presence of the parasite.

Treatment. A number of remedies—termed *tæniacuges*—are used more or less successfully for the expulsion of the tapeworm, to wit: *extractum granati rad. cort. fluidum*, f3ss-ij, or a *decoctum granati rad. cort.* (3ij bark of root, aquæ Oj), wineglassful every hour until all is taken, as suggested by Prof. Bartholow; or *oleoresina aspidii*, 3ss doses repeated, or *oleum pepo express*, 3j-iv, followed by *oleum ricini*.

A much pleasanter remedy is *pelleterine*, the active constituent of *granatum*, used in the form of the *tannate*, gr. x-xx, or *Tanret's solution of pelleterine*.

Cases which resist these means are often cured by the following:—

R.	Chloroformi,	
	Ext. aspidii fld.....āā.....	f3j
	Emul. olei ricini.....(B. Ph.).....	3ij.
		M.

SIG.—To be taken in the early morning; no food until after thorough action of the bowels.

An important precaution in the management is close attention to the “preparatory treatment” rendered essential to remove the mucus in which the *head* (scolex) is imbedded. It consists in the administration of a good purgative for one or two days, and a light diet, such as milk and broths, preceding the use of the *tæniacuge*.

ROUND WORMS.

Varieties. *Ascaris lumbricoides* ; *Oxyuris vermicularis*.

Causes. The *ascaris lumbricoides* is one of the most common of the parasites affecting the human family, and develops in the intestines, either after the entrance of the *ova* of the same, or from the so-called "intermediate parasites." Their entrance is effected by means of the food and drink.

The *oxyuris vermicularis* develops in the large intestines, from either its peculiar *ova*, or the so-called "intermediate parasite," these finding their way into the bowel with the food and drink, or by direct contact.

Description. The *ascaris lumbricoides*, or the *round worm*, is of a brown color, a cylindrical *body*, from ten to twenty inches in length and from an eighth to a fourth of an inch in circumference ; the *head* terminates in three semilunar lips, each having about two hundred teeth. The *ova* are oval-shaped, are produced in immense numbers, some sixty million in a mature female, have wonderful vitality, resisting extreme heat or cold.

The *round worm* inhabits principally the *small intestines*, although it often migrates to other parts. They are found in numbers from one to several hundred.

The *oxyuris vermicularis*, *thread* or *seat worm*, resembles an ordinary piece of white thread, measuring from a sixth to a half inch in length, the *head* terminating in a mouth with three lips, the *tail* terminating as a sharp point. The *ova* are oval, produced in large numbers, each female containing about ten thousand, are surrounded by a stout envelope, which increases their vitality.

The *seat worm*, as its name indicates, inhabits the *large* intestines, especially the rectum, although they frequently migrate to the sexual organs. They vary in number, sometimes the parts frequented being entirely covered.

Symptoms. The *ascaris lumbricoides*, or *round worm*, may be present in great numbers and yet produce no characteristic symptoms other than *gastric* and *intestinal irritation*, such as picking the nose, foul breath, colicky pains, nausea and vomiting, diarrhœa and disturbed sleep, such as tossing from side to side of bed and grinding the teeth. Any or all of these symptoms may be present or absent, the only positive proof being the passage of the parasite.

The *oxyuris vermicularis*, or *seat worm*, produce *intense itching*

about the anus, with a desire for stool, the passages often containing much mucus, the result of the irritation produced by their presence. Should they migrate to the sexual organs, intense itching of these parts results, which, unless speedily corrected, leads in children to masturbation.

Treatment. The *ascaris lumbricoides* are readily removed by the following "worm powder":—

R. Santonini.....	gr. $\frac{1}{4}$ -j-ij	
Hydrargyri chlor. mite.....	gr. $\frac{1}{3}$ -ij.	M.
Ft. chart.		

SIG.—At bedtime, followed by a dose of *oleum ricini* before breakfast.

For the *oxyuris vermicularis* the above *santoninum* powder, with the use of *enemata* of *quassia*, *alumen*, *sodii chloridum*, or R., *acidi carbolici*, gr. v-x, aquæ, Oj, according to the age, the injection not to be retained. Washing the anus and external genitals with a solution of *acidum carbolicum* should also be employed.

DISEASES OF THE PERITONEUM.

PERITONITIS.

Synonym. Inflammation of the peritoneum.

Definition. A fibrinous inflammation of the peritoneum, either *acute* or *chronic* in character, characterized by fever, intense pain, tenderness, tympanites, vomiting and prostration. It may be limited to a part—*local*, or it may involve the whole membrane—*general*, peritonitis.

Causes. *Acute variety*: Intense cold; protracted irritation by blisters; blows upon the abdomen; inflammation or perforation of the stomach, intestines, gall or urinary bladder; inflammation of the pelvic viscera; septicæmia or pyæmia; erysipelas.

Chronic variety: Tuberculosis; albuminuria; scrofula; cancer; sclerosis of the liver.

Pathological Anatomy. *Acute form*; hyperæmia of the serous membrane, the capillaries distended and occasional extravasations of blood from their rupture; the normal secretion is arrested, and the shiny membrane becomes dull and opaque, from an exudation of pure

fibrin, which is adhesive, gluing the parts together; if the inflammatory action is now arrested, it is termed *adhesive* peritonitis; if, however, the action progress, an effusion of serous fluid is poured out into the peritoneal cavity, the amount varying from a few ounces to several gallons; this is termed *exudative* peritonitis. If recovery result, the fluid is absorbed, with much of the solid exudation, the unabsorbed portions forming adhesions between the membrane and the different abdominal organs, often causing great deformity and irregularity in their relations.

The chronic form follows the acute, or is associated with tuberculosis, scrofula, Bright's disease or sclerosis of the liver.

The membrane is irregularly thickened and opaque, with strong adhesions to one or more coils of the intestine, the liver or spleen; the quantity of fluid present is small, purulent or sero-purulent in character, and encysted by the agglutinated membrane.

Symptoms. *Acute form*; when idiopathic, the onset is sudden, with a *chill*, *fever*, $102-3^{\circ}$, *pulse* 100-140, wiry and tense, *severe pain*, cutting or boring in character, and *tenderness*, becoming so great that the slightest touch aggravates it, the *decubitus* being on the back, with flexed thighs; the *abdomen* is *distended* and *rigid*, from *constipation*, *effusion* and *meteorism*; the diaphragm is pushed up as far as the third or fourth rib in severe cases, causing compression of the lungs, and displacement of the heart, liver and spleen. There is *impaired appetite*, and *nausea* and *vomiting* are almost constant, as in *hiccough*.

Secondary form, from extension, begins with local and gradually increasing pain, the temperature increases, tense pulse and vomiting. If *from perforation*, it is announced by severe pain and all the symptoms of shock.

These symptoms continue from six to eight days, when they begin to ameliorate and a tedious convalescence ensues, or pain and tenderness grow more marked, strength fails, surface cold, pulse rapid, and collapse, with hippocratic face, to wit: anxious expression, pinched features, sunken eyes and drawn upper lip.

Chronic form; irregular *chills*, *fever* and *sweats*; *distended abdomen*, *constipation*, alternating with *diarrhœa*; diffused *tenderness*, with *points of intenseness* and *hardness*; *colicky pains* during digestion, *rapid emaciation* and failure of strength. Usually, the lower portions of the abdomen give a dull note on percussion, from the

presence of fluid, or scattered points of dullness, showing the presence of encysted fluid.

Diagnosis. *Acute gastritis* differs from peritonitis in having a history of corrosive poisoning, severe pain, limited to the stomach, with early and severe vomiting; while the latter has fever, diffused abdominal pain and tenderness, with decided distention.

Acute enteritis has localized pain and tenderness with marked diarrhœa; constipation being the rule in peritonitis.

Rheumatism of the abdominal muscles occurs with a rheumatic history, is subacute, lacks the great abdominal distention of peritonitis, and while tenderness exists, it is not aggravated by deeper pressure.

Biliary colic, or the passage of a *gall-stone*, has, as a prominent symptom, excruciating pain, localized over the common bile duct, which is of a paroxysmal character and followed by jaundice. In *renal colic* the acute pain follows the course of the ureters, with retracted testicle and altered urinary secretion.

Prognosis. *Idiopathic cases* favorable, and especially if they continue longer than a week, as fatal cases usually end during the first week. Cases from perforation unfavorable.

Chronic peritonitis being generally of tuberculous origin, the prognosis is unfavorable, although partial or complete recovery results in the cases following the acute form of the disease.

Treatment. *Acute form*: Idiopathic and robust cases, locally, *leeches* or *wet cups*, followed by *cold* or *hot* applications, as most agreeable to the patient, or covering the abdomen with a *blister*; adynamic cases, *dry cups*, followed by warm applications medicated with *tinctura opii*.

Opium and *quinina* are the remedies indicated at the onset of the disease, to wit: at once hypodermatic of *morphina*, gr. $\frac{1}{4}$ - $\frac{1}{3}$, maintaining the effect by hourly doses of either *morphina* or *opium*, by the mouth. Prof. Clark ascertained the tolerance of opium in this disease, by the tremendous amounts used in a case under his care; the first day he gave 200 grs., the second day 472 grs., the third day 236 grs., fourth day 120 grs., fifth day 54 grs., sixth day 22 grs., and on the seventh day 8 grains. Prof. Clark found that, as a rule, however, *morphina*, gr. $\frac{1}{6}$ - $\frac{1}{4}$, every two hours, would maintain the effects of the drug. The *opium* should be guarded with sufficient doses of *atropina*. *Quinina*, gr. v, every four hours until exudation, after which gr. ij, four times a day, is of marked benefit.

The decline of the vital powers must be averted by *regulated nutrition* and *free stimulation*.

During *convalescence*, perfect quiet, nourishing diet, moderate stimulation, scattered flying blisters, and the following :—

R.	Potassii iodidi.....	gr. v-x	
	Ferri pyrophos.....	gr. ij	
	Tinctura lavandulæ comp.....	℥xv	
	Syr. aurantii corticisad.....	ʒij.	M.
Every six hours,			

should constitute the treatment, with tonic doses of *quinina*.

Peritonitis from *perforation*, absolute quiet, hypodermatic injections of *morphina*, ice locally, and stimulants per mouth, rectum, or hypodermatically.

Chronic peritonitis; locally *tinct. iodi*, and internally *opium*, for pain; *potassii iodidum* as an absorbent, with nourishing diet, *oleum morrhue* and *stimulants*, and rest in bed.

ASCITES.

Synonyms. Dropsy of the abdomen; peritoneal dropsy.

Definition. A collection of serous fluid in the abdomen, or more correctly in the peritoneal cavity; characterized by swollen abdomen, fluctuation, dullness on percussion, displacement of viscera, embarrassed respiration, *plus* the symptoms of its cause.

Causes. Ascites may form part of a general dropsy, to wit: cardiac or nephritic; the most common factor in its production is *mechanical obstruction* of the portal system, from cirrhosis of the liver, tumors, diseases of the heart or lungs.

Pathological Anatomy. The quantity of fluid in the peritoneal sac ranges from a few ounces to many gallons. It is generally of a straw color, or at times greenish, and is transparent, having an *alkaline* reaction. When blood is present in any great quantity, it points to cancer as a cause. The peritoneum becomes cloudy, sodden, and thickened, from long contact with the fluid.

Symptoms. The onset is insidious, and considerable *swelling of the abdomen* occurs before the disease attracts attention. *Constipation*, from pressure of the fluid on the sigmoid flexure. *Scanty urine*, from pressure on the renal vessels. *Embarrassed respiration*

and *cardiac action*, from pressure on the diaphragm upward. The *umbilicus* is forced outward.

Physical signs; on *palpation*, a peculiar wave-like impulse is imparted to the hand laying on the side of the abdomen, while gently tapping the opposite side.

Percussion; patient erect, the fluid distends the lower abdominal region, with *dullness* over the site of the fluid and a *tympanitic note* above; if the patient turns on his side the fluid changes, and dullness over the fluid, tympanitic over the distended intestines.

Diagnosis. *Ovarian tumors* differ from ascites in the history, in that the enlargement is limited to the iliac fossa, instead of a uniform abdominal enlargement, not changing its position when the patient changes posture, and by the detection of a tumor by conjoined manipulation through vagina, or by rectal exploration.

Pregnancy differs from ascites in the character of the enlargement, the history, absence of menses, increase of mammæ, change in the neck of the uterus, absence of fluctuation, and the presence of the sounds of the foetal heart.

Distention of the bladder has been mistaken for ascites; the points of distinction are, in the former the history, presence of tenderness over the bladder, rounded outline of the percussion dullness, and the relief afforded by the catheter.

Chronic peritonitis is differentiated by the history, pain, tenderness, more or less vomiting, thickened abdominal walls, and its generally being associated with tubercle or cancer.

Chronic tympanites presents the enlarged abdomen, but lacks the history, the dullness and the fluctuation, giving instead a tense abdomen and a universal tympanitic note.

Prognosis. Influenced by the causes producing it. *Idiopathic ascites*, which is most rare, terminates in health within a few weeks. If *peritoneal*, generally favorable. If from *organic disease*, most unfavorable, for while the dropsy may be removed, it as rapidly returns.

Treatment. The first indication is to treat the cause of the ascites, and the second to remove the fluid.

Three modes of removing the fluid present themselves, to wit: *first*, by hydragogue cathartics, *second*, diuretics, and *third*, tapping. The first and second modes may be combined, as follows:—

R. Pulv. jalapæ comp..... ʒj-ij

In water, an hour before breakfast;

And—℞. Potassii acetat..... gr. x-xx-xl
 Tinct. scillæ..... ʒ^{ss}
 Infus. digitalis..... f ʒ iss. M.

Every six hours.

Or instead use the following :—

℞. Hydrargyri chlor. mite..... gr. iij
 Ext. opii..... gr. ʒ¹/₂. M.
 Et ft. pil.

SIG.—One every three or four hours.

If these fail, as they certainly will after a time, the embarrassed respiration and cardiac action will call for *tapping*, which may be done with the *trocar*, or better still, the *aspirator*.

DISEASES OF THE BILIARY PASSAGES.

CATARRHAL JAUNDICE.

Synonyms. Catarrh of the bile ducts; icterus.

Definition. An acute catarrhal inflammation of the mucous membrane of the bile ducts and of the duodenum; characterized by gastro-intestinal derangement, yellowness, itching of the skin, feverishness and mental depression.

Causes. Excesses in eating and drinking; a debauch; malaria; climatic, as cool nights succeeding warm days.

Pathological Anatomy. The mucous membrane of one or more of the bile ducts or of the duodenum becomes hyperæmic, swollen and thickened, from an effusion of serum into the sub-mucous tissue; the result of this condition is the closure of the biliary passages, thereby impeding the outward flow of bile. The bile in the hepatic ducts being retained by the obstruction, the result is a staining of the liver substance and an *absorption* of bile, and its appearance in the blood.

Symptoms. Begins by *epigastric distress*, *coated tongue*, *impaired appetite*, *nausea*, with, perhaps, *vomiting* and *looseness of the bowels* and *slight feverishness*, the phenomena of a gastro-intestinal catarrh. In from three to five days the *eyes become yellow*, and *jaundice* gradually appears over the whole body; the feverishness disappears, the *skin* becomes harsh, dry and *itchy*, the *bowels constipated*, the

stools whitish or clay-colored, accompanied with much *flatus* and *colicky pains*; the urine heavy and dark, loaded with urates and containing biliary elements.

A few drops of the urine placed on a whitish surface, and a drop or two of nitric acid made to flow against it, will exhibit the following "*play of colors*;" a *greenish* tint, from the conversion of bilirubin into biliverdin, quickly followed by *blue, violet, red, and yellow, or brown*.

When the *jaundice* is complete, the *surface is cold*, the *heart's action slow*, the *mind torpid* and *greatly depressed*, and pain or tenderness on pressure over the hepatic region.

Duration. In from three to five days after the jaundice appears, the symptoms subside, save the torpid bowels, depression and discolored skin, which slowly disappear, often requiring a week or two.

Diagnosis. After the appearance of the jaundice, mistakes are impossible.

The numerous diseases of which jaundice is a symptom will be differentiated when treating of them.

Prognosis. Always favorable; if the attacks are of frequent occurrence, however, they are apt to lead to organic hepatic changes.

Treatment. At the onset *quinina*, gr. x, morning and night, may modify the disease, but as soon as the diagnosis is established the indications are for *diaphoretics, diuretics* and *purgatives*.

For *diaphoresis*, the *warm bath*, to which *potassii carbonas*, ʒj, may be added, morning and night.

For *diuresis*, *potassii bitartras lemonade*, every four hours.

For *purgation*, either *sodii pyrophos.*, ʒj-ij, every four hours, well diluted, or *ammonii murias*, gr. xv-xx, every five hours, well diluted.

A special plan, which is said to be effective, is with "*enemata of cold water*. By means of an irrigating apparatus the large intestine is well distended with water once a day for several days. The first enema has a temperature of 60° F., and subsequent injections are a little warmer. The increased peristalsis of the bowels and the reflex contractions of the gall bladder dislodge the mucous lining and obstructing the gall ducts. When the bile flows into the intestine, digestion is resumed and the catarrhal inflammation subsides." Other remedies may be conjoined with the irrigation method.

Restricted diet, avoiding all starchy, fatty or saccharine articles, milk being the most suitable.

For *convalescence*—

R. Acid. nitrohydrochlorici dil.....	gr. v-x	
Elix. taraxaci comp.....	ʒj-ij.	M.
Before meals.		

BILIARY CALCULI.

Synonyms. Hepatic calculi ; gall stones ; hepatic colic.

Definition. Concretions originating in the gall bladder, or biliary ducts, derived partly or entirely from the constituents of the bile. Their presence is generally unrecognized until one or more attempt to pass along the ducts, when an attack of *hepatic colic* is produced.

Causes. Gall stones result from the *precipitation* of the crystallizable *cholesterine*, and its combination with inspissated mucus in the gall bladder or ducts.

A disease of middle life, and more frequent in the obese, and in women.

Gall stones are said to be common in carcinoma of the stomach or liver.

Pathological Anatomy. Cholesterine is the chief constituent of biliary calculi. Commonly several stones exist, and rarely one ; as many as six hundred are recorded. They are generally found in the gall bladder or cystic duct, rarely in the liver or hepatic duct.

Symptoms. *Hepatic colic* begins suddenly, at the moment a gall stone passes from the gall bladder into the cyst duct.

The patient is seized with a *piercing, agonizing pain* in the region of the gall bladder, and spreading over the abdomen, right chest and shoulder ; the *abdominal muscles* are *cramped and tender* ; there is *nausea and vomiting*, a small, *feeble pulse, cool skin, pale, distorted, anxious face*, with, may be, fainting, spasmodic trembling, chills, or convulsions.

The paroxysm continues from an hour or two to several days, with remissions, but entire relief is not afforded until the stone reaches the duodenum, when the pain suddenly ceases.

Jaundice usually follows the paroxysm of pain. When the calculi reaches the intestines, the pain, nausea and vomiting cease, the appetite returns, and the jaundice soon disappears.

Should the calculi become impacted, *ulcerative perforation* and consequent *peritonitis* follow, the calculi discharging by the intestine, stomach, or through the abdominal walls.

Diagnosis. The malady should not be mistaken if *severe pain*, *nausea*, and *vomiting* are present, suddenly terminating, and followed by slight jaundice.

Prognosis. Usual termination is in health. The prognosis becoming more unfavorable if ulcerative perforation result.

Treatment. For the *colic*, hypodermatic injections of *morphina*, gr. $\frac{1}{6}$ – $\frac{1}{3}$ – $\frac{1}{2}$, combined with *atropina*, gr. $\frac{1}{120}$, and warm fomentations over the hepatic region, are indicated.

Prof. Bartholow strongly urges the following prophylactic treatment: Carefully regulated diet, abstinence from all fatty and saccharine substances, daily exercise, stoppage of all excesses, and the long use of *sodii phosphas*, \mathfrak{zj} , before meals, well diluted, to which may be added, if gastro-intestinal catarrh be present, *sodii arsenias*, gr. $\frac{1}{20}$, or *aurii et sodii chloridum*, gr. $\frac{1}{20}$, together with either Vichy or Saratoga Vichy water.

DISEASES OF THE LIVER.

CONGESTION OF THE LIVER.

Synonyms. Torpid liver; biliousness.

Definition. An abnormal fullness of the vessels of the liver, with consequent enlargement of that organ; it is termed *active* when arterial; *passive* when venous. The condition is characterized by torpidity of the digestive and mental functions, and slight jaundice.

Causes. *Active congestion*; malaria; excess in eating and drinking; alcoholic or malt liquor.

Passive congestion; cardiac and pulmonary diseases.

Pathological Anatomy. The liver is enlarged in all directions, and is abnormally full of blood. Cases due to obstructive diseases of the heart or lungs present the so-called "nutmeg liver," to wit: "At the centre of each lobule the dilated radicle of the hepatic vein, enlarged and congested, may be discerned, while the neighboring parts of the lobule are pale," the radicles of the portal vein containing less blood.

Long-continued congestion establishes atrophic degeneration of the organ; the decrease in size is confounded with the condition of cir-

rhosis, but the "atrophic liver" is smooth, while the "cirrhotic liver" is nodulated.

Symptoms. *Active congestion*; following cause, rapidly produced *malaise, aching of limbs, evening feverishness, headache, yellowish tongue, disgust for food, nausea, and, may be, vomiting, constipation, scanty, high-colored urine, with a feeling of fullness, weight, and soreness in the hepatic region, and slight jaundice, the eye yellow, and the complexion muddy.*

Passive congestion; onset gradual, with a feeling of weight and fullness in the hepatic region, slight jaundice, and symptoms of gastro-intestinal catarrh.

On percussion the hepatic dullness is increased in all directions.

Diagnosis. Acute congestion is continually confounded with *catarrhal jaundice*; the latter begins with marked gastro-intestinal symptoms and distinct jaundice; in the former these are less marked.

Obstructive congestion is diagnosticated by the clinical history.

Atrophic or nutmeg liver will be differentiated from cirrhotic liver when speaking of the latter.

Prognosis. *Active congestion* favorable, unless repeated attacks occur, rapidly succeeding each other, when "atrophic degeneration" results.

Passive congestion controlled entirely by the cause.

Treatment. Attacks due to *excess in eating and drinking*:

R. Sodii bicarb.....	gr. v
Pulv. ipecac.....	gr. ss
Hydrargyri chlor. mit.....	gr. iij-v

repeated or *sodii phosphatis* ʒj every four hours until free catharsis, followed by

R. Acidi nitrohydrochlorici dil.....	ʒviiss
Elix. taraxaci comp.....	ʒij.

Before meals, and a milk diet.

Attacks due to *malaria*; the above purgative followed by *quininæ sulph.*, gr. iv, every four hours.

Attacks occurring with cardiac or pulmonary diseases must be managed by treating the cause.

The tendency to constipation must be overcome by the *saline laxative waters*, to wit: Congress or Hathorn, Pullna or Friedrichshall, or *sodii phosphas*, ʒi-ij, three or four times daily, well diluted.

Locally, in acute attacks, hot cloths or sinapisms, are of benefit.

In *chronic cases* benefit follows, *elix. quininæ ferri et strychninæ*, ʒj, three times a day, and great comfort and support is given by the use of the "*hydropathic belt*," which is made of stout muslin, shaped to the abdomen, with cross pieces of tape on the inner side, which keeps next to the skin a fold of cloth wrung out of cold water, and a piece of waterproof cloth or oiled silk, to prevent evaporation.

ABSCESS OF THE LIVER.

Synonyms. Parenchymatous hepatitis; acute hepatitis; suppurative hepatitis.

Definition. A diffused or circumscribed inflammation of the hepatic cells, resulting in suppuration, the abscesses being sometimes single, at times double; characterized by irregular febrile attacks, hepatic tenderness and symptoms of deranged gastro-intestinal and hepatic functions.

Causes. The result of the absorption of putrid material by the portal radicles in dysentery; ulcers of the stomach; malaria; blows and injuries; heat; pyæmia.

Pathological Anatomy. Hyperæmia, swelling, effusion of lymph, degeneration and softening of the hepatic cells; suppuration, beginning in points in the lobules and coalescing. The abscess walls consist of the liver structure, more or less changed.

The abscess may advance toward the surface of the liver, bursting into the peritoneum, intestines, stomach, gall bladder, hepatic duct or vein, or into the pleura or lungs, or externally through the abdominal walls; after the discharge of pus, cicatrization occurs, or the pus may be absorbed, the tissues around forming a dense cicatrix.

Symptoms. Very obscure. *Fever* simulating markedly intermittent or remittent fevers; disorders of the gastro-intestinal canal, with *obstinate vomiting*, *debility*, and great *irritability* of the *nervous system*, *slight jaundice*, and if of long duration, *typhoid symptoms*.

Locally, if the abscess is near the surface, *prominence of the hepatic region*, *throbbing*, limited *tenderness*, and if it tends to the surface, redness, œdema and fluctuation. The abscess may burst into the intestines, stomach, lungs, or pleura, the symptoms of which will be pronounced.

Diagnosis. Hepatic abscess may be confounded with hydatids of the liver, hepatic or gastric cancer, abscess of the abdominal walls, and purulent effusion in the right pleural cavity.

The differentiation is most difficult, but *great aid* is obtained from the use of the *aspirator*.

Prognosis. Unfavorable. Recoveries, however, do occur. If the abscess bursts into the lungs, bowels, or externally through the abdominal wall, the case is more favorable.

Treatment. *Symptomatic*, and when *pus* is present, the use of the *aspirator* to remove it, and sustaining treatment, to wit: *quinina*, *ferrum*, *alcohol*, and *oleum morrhue*.

ACUTE YELLOW ATROPHY.

Synonyms. General parenchymatous hepatitis; malignant jaundice; hemorrhagic icterus.

Definition. An acute diffused or general inflammation of the hepatic cells, resulting in their complete disintegration: characterized by diminution in the size of the liver, deep jaundice, and profound disturbance of the nervous system; terminating in death, usually, within one week.

Causes. Unsettled. It occurs frequently in young pregnant women, from the third to the sixth month of pregnancy. Other causes are venereal excesses; syphilis; action of phosphorus, arsenic or antimony.

Pathological Anatomy. Begins with hyperæmia of the hepatic cells, with a grayish exudation between the lobules, followed by softening, dull yellow color, and disappearance of the cells, fat globules taking their place. The liver is reduced in size and in weight. The peritoneum covering the liver is thrown into folds. The spleen is enlarged. The kidneys undergo degeneration. The blood contains a large amount of urea and considerable leucin. The urine is loaded with bile pigment, and contains albumen.

Symptoms. *Prodromic period*; begins as a *gastro-intestinal catarrh*, coated tongue, nausea, vomiting, tenderness over the epigastrium, headache, quickened pulse, slight fever and slight *jaundice*.

Icteric period; *jaundice* deepens, pulse slow, headache increases, and great and obstinate *sleeplessness*.

Toxæmic period; *fever*, rapid *pulse*, more complete *jaundice*, *pain*,

nausea, *vomiting of blackish, grumous blood*, or "coffee grounds," *tarry stools*, ecchymotic patches, *convulsions* or epileptiform attacks, *coma*, insensibility, death.

Percussion shows markedly *decreased* hepatic dullness.

Duration. Short. After appearance of jaundice, about six days.

Prognosis. Unfavorable.

Treatment. Entirely symptomatic. Prof. Bartholow "advises the trial of very small doses of phosphorus, as early as possible, as this remedy affects the organ specifically, and an action of antagonism may be discovered between them."

SCLEROSIS OF THE LIVER.

Synonyms. Interstitial hepatitis; cirrhosis of the liver; hob-nailed liver; gin-drinkers' liver.

Definition. An inflammation of the intervening connective tissue of the liver, chronic in its progress, resulting in an induration or hardening of the organ and an atrophy of the secreting cells; characterized by gastro-intestinal catarrh, emaciation, slight jaundice and ascites.

Causes. The prolonged use of alcoholic stimulants, gin, whisky, beer, or porter; syphilis.

Pathological Anatomy. *First stage*; hyperæmia of the connective tissue (Glisson's capsule) of the liver, and the development of brownish-red connective-tissue elements, whereby the organ is increased in size and density; this increase of the connective tissue presses upon the hepatic cells, causing them to undergo fatty degeneration.

Second stage; the newly formed, imperfectly developed connective tissue contracts, causing decrease in the size and induration of the organ, its surface being nodulated. The hepatic and portal circulation is obstructed, from obliteration of their radicles.

The hepatic peritoneum is thickened and opaque, and adhesions are formed to the diaphragm, gall-bladder, and stomach.

Cases occur in which the sclerosis takes place while the organ continues enlarged; these cases are known as *hypertrophic sclerosis*.

Symptoms. No characteristic symptoms of the early stage of the affection. Persistent *gastro-intestinal catarrh*, with attacks of *jaundice*, in a drinking man, are suspicious. Symptoms of the second

stage are, *abdominal dropsy*, *enlargement* of the superficial *abdominal veins*, *dyspepsia*, localized peritoneal *pain*, *hemorrhages* from the *stomach* or *intestines*, muddy or slightly *jaundiced* skin and *decided emaciation*.

Diagnosis. *Atrophy of the liver*, or the nutmeg liver, is almost always confounded with sclerosis; the former occurs most commonly with obstructive diseases of the heart and lungs, and the surface of the organ is not nodulated, nor is there a history of alcoholism.

Cancer and tubercle of the peritoneum have many symptoms akin to sclerosis. The points of differentiation are, great tenderness over abdomen, rapidly developed ascites, rapid decline in strength and flesh, absence of jaundice, absence of long-continued dyspepsia, absence of hepatic changes on percussion, and the presence of tubercle or cancer deposits in other organs.

Prognosis. Terminates in death. Average duration after appearance of the dropsy, one year.

Treatment. For the changes in the hepatic structure, little, if anything, can be done; the following are some of the remedies recommended, to wit: *hydrargyri chloridum corrosivum*, gr. $\frac{1}{80}$ – $\frac{1}{40}$, three times a day; *hydrargyri chloridum mite*, gr. $\frac{1}{100}$, three times a day; *aurii et sodii chloridum*, gr. $\frac{1}{20}$, after meals; *sodii phosphas*, 3 ss–j, after meals.

The diet must be regulated, *milk* being the most suitable, and avoiding fatty and saccharine foods.

The abdominal dropsy may be temporarily benefited by *purgatives* and *diuretics*, but sooner or later *tapping* becomes imperative.

AMYLOID LIVER.

Synonyms. Waxy liver; lardaceous liver; scrofulous liver; albuminous liver.

Definition. A peculiar infiltration into, or a degeneration of, the structure of the liver, from the deposit of an albuminoid material, which has been termed *amyloid*, from a superficial resemblance to starch granules.

Causes. The chief cause is prolonged suppuration, especially of the bones; coxalgia; syphilis; cancer.

Pathological Anatomy. The liver is uniformly enlarged. It presents a pale, glistening, translucent appearance, and has a doughy

consistency. On section, the surface is homogeneous, is anæmic and whitish. The deposit begins in the arterioles and capillaries, finally closing them.

The reaction with iodine and sulphuric acid affords a certain test of the amyloid or albuminoid deposits. After further cleansing, brush over the parts a solution of iodine with iodide of potassium in water, when they will assume a mahogany color, and if diluted sulphuric acid be added, a violet or bluish tint is produced.

A pretty reaction is to take a one per cent. solution of anilin violet, which strikes a red or pink color with the amyloid or albuminoid material, while the unaltered tissues are stained blue, thus showing a beautiful contrast.

The amyloid change involves the spleen, kidney, intestines, and other organs.

Symptoms. Nothing characteristic. Hepatic dullness increased, with prominence over the liver. Absence of pain. Splenic dullness increased. Emaciation and anæmia. Urine increased in amount, pale, and containing some albumen, due to amyloid changes in the kidneys. Disorders of digestion, with diarrhœa, due to amyloid changes in the intestines. Jaundice is rare. Ascites seldom occurs.

Prognosis. Unfavorable. The progress is rapid or slow, depending upon the cause.

Treatment. No specific. Symptomatic, with prolonged use of *ferrum*; *syr. calcii lacto-phosphas* and *oleum morrhue*.

HEPATIC CANCER.

Synonym. Carcinoma of the liver.

Definition. A peculiar morbid growth, progressively destroying the hepatic tissue; characterized by disorders of digestion, anæmia, emaciation, jaundice and ascites, and terminating in the death of the patient.

Causes. Hereditary, when it is termed *primary* cancer; from extension from other organs, when it is termed *secondary* cancer. It is a disease of advanced life, from forty to sixty years.

Pathological Anatomy. The most common variety of cancer of the liver is a compound of the medullary and scirrhus.

The cancer cells develop from the interlobular connective tissue, and as they grow the hepatic cells atrophy, the result of the pressure

of the new growth. The branches of the hepatic artery enlarge and permeate the growth, while the branches of the portal vein are compressed and atrophied, thereby blocking up the portal circulation.

The cancer may develop in nodules or masses, or may be diffused ; the nodules vary in size, and those on the surface are rounded, with a central umbilication. The peritoneum is adherent, cloudy and thickened.

Symptoms. The development of hepatic cancer is preceded by a history of dyspepsia, flatulency and constipation. The *uneasiness, weight and pain*, increased by pressure, are noticed ; *jaundice, ascites*, occasional intestinal *hemorrhages, emaciation, feebleness, anæmia, cold, dry, harsh skin, pinched features*, with *dejected, worn expression. Fever never occurs.* The hepatic dullness is increased, with pains on palpation, and the liver is indurated, irregular and nodulated.

The duration is less than a year from the time the disease is recognized.

Diagnosis. The points of differentiation are the *age, cachexia, pain and tenderness, enlarged liver with hard nodules*, and *rapid progress.*

Prognosis. Always terminates in death.

Treatment. Early symptomatic. Sooner or later *opium* must be used, to relieve the terrible and persistent pain.

DISEASES OF THE KIDNEYS.

THE URINE.

The *normal quantity* of urine varies from twenty to fifty ounces in the twenty-four hours ; it is *decreased* by free perspiration and *increased* by chilling of the skin.

The *normal color* is light amber, due to *urobilin* ; the color deepens if the quantity voided be decreased, and *vice versa*.

The *normal reaction* is slightly *acid*, due to the *acid sodic phosphate, uric and hippuric acids*. After meals it may be *neutral* or even *alkaline*.

The *normal specific gravity* varies from 1.008 to 1.020 ; it is *low*

when an increased quantity is passed and *high* when the quantity is diminished.

The most important organic and inorganic solid constituents held in solution are, *urea* (the index of nitrogenous excretion), from 308 to 617 grains daily ; *uric acid*, from 6 to 12 grains ; *urates of sodium*, *ammonium*, *potassium*, *calcium* and *magnesium*, from 9 to 14 grains ; *phosphates of sodium*, etc., from 12 to 45 grains, and *chlorides of sodium*, etc., from 154 to 247 grains daily.

I. Quantitative test for *urea*, by hypobromite of sodium (Davy's Method).

Fill a graduated glass tube one-third full of *mercury*, and add one-half drachm of the 24 hours' urine ; then fill the tube evenly full with a saturated solution of *hypobromite of sodium*, and close it *immediately* with the thumb ; invert the tube and place its open end beneath a sat. sol. of *chloride of sodium* ; the mercury flows out and is replaced by the solution of salt ; *nitrogen gas* is disengaged from the *urea* in the upper part of the tube.

Each *cubic inch of gas* represents .645 gr. of *urea* in the half drachm, from which the amount passed in 24 hours may be calculated.

Urine containing an excess of *urates* and *uric acid*, on *cooling*, precipitates them (viz. : "brickdust deposits" in "pot de chambre"). *Heat* dissolves them to a certain extent.

II. Tests for *urates* and *uric acid* by nitric acid.

Nitric acid deprives the soluble *neutral urates* of their bases, and produces, at first, a faint, milky precipitate of amorphous *acid urates* ; adding more acid, the still less soluble *red crystals of uric acid* are deposited.

Put a small quantity of *nitric acid* in a test tube, and pour the urine carefully down the sides of the tube upon it, and a *zone* of *yellowish-red uric acid* and altered coloring matter will form at their union ; and a dense, milky *zone* of *acid urates* above this, which, however, dissolves upon agitation. (See albumen test.)

III. Quantitative test for *uric acid* by nitric acid.

To *three ounces* of the 24 hours' urine (after being slightly acidulated, boiled and filtered while hot) add *one-tenth* as much *nitric acid*; place in a cool place for 24 hours, then collect the deposit of *uric acid* on a weighed filter, wash it thoroughly, and dry at 212° F. The increased weight represents the uric acid in part excreted, approximately.

IV. Test for the earthy and alkaline *phosphates* by the magnesian fluid.

Heat or *liquor potassa* increases the cloudiness caused by earthy calcium and magnesium phosphates. *Acetic* or *nitric acid* clears it, by dissolving them.

To two ounces of urine add one-third as much of the following solution, to wit: R. Magnesii sulph., ammonii chloridum puræ, liquor ammoniæ, each one part; aquæ destil., eight parts; if the precipitate has a *milky*, cloudy appearance, the quantity of phosphates is normal; if *creamy*, the *phosphates* are in excess.

V. Test for the *chlorides* by nitrate of silver.

To a convenient quantity of urine add a small amount of nitric acid, to prevent the formation of the phosphates and other salts of silver; filter this, if cloudy; add to this *one drop* of a solution of nitrate of silver (1 part to 8) and the precipitate of white cheesy lumps of *chloride of silver* denotes that the amount of *chlorides* are normal; if, however, only a *faint milkiness* occurs, the *chlorides* are diminished.

VI. Test for *mucus* by acetic acid and liquor iodi comp.

Mucus alone is not visible, but causes *cloudiness*, from having entangled mucus or pus corpuscles, epithelium, granules of sodium urate, crystals of oxalate of lime and uric acid in various amounts.

Add to the urine a little *acetic acid*, or, in addition, a few drops of *liquor iodi comp.*,

when threads and bands of *mucin* are made visible. The addition of *nitric acid* dissolves them.

Slightly acidulate the urine, if necessary, by addition of *nitric* or *acetic acid*, and *boil*; this causes a *white* deposit of *coagulated albumen*, which is not dissolved by *nitric acid*, unless the acid is in excess.

VII. Tests for *albumen* by heat and *nitric acid*.

Nitric acid causes a *white* deposit of *coagulated albumen*, which is dissolved if a large excess of acid be added. A delicate test is to put the *nitric acid* in the tube first, and then gradually pour the urine down the side of the tube upon it, when a *white zone*, or *ring of coagulated albumen* appears. *Precaution*, see tests Nos. 3, 4, 9 and 11.

VIII. Quantitative test for *albumen*. Approximately.

Add a few drops of *nitric acid* to a proportion of the urine, and *boil*; set this away for 24 hours, and the proportionate depth of the resulting deposit is the comparative indication, viz., $\frac{1}{4}$ – $\frac{1}{2}$, etc.

IX. Test for *blood* by heat and *nitric acid*.

Heat or *nitric acid* causes deposit of *albumen*, with the coloring matter changed to a *dirty brown*.

X. Test for *blood* by heat and *caustic potash* (Heller's).

Heat the urine, then add *caustic potash* and *heat* anew. The phosphates are thus precipitated, taking with them the coloring matter of the blood, which imparts a *dirty, yellowish-red* color to the sediment, viewed by reflected light, and when seen by transmitted light, gives a splendid *blood-red color*.

Neither the coloring matter of the blood, nor that of the bile, is precipitated with the phosphates, so that coloration of urine which shows this reaction cannot be ascribed to the presence of the latter pigments.

When the quantity of blood in the urine is very large, it is of a *dark* or *brownish red*,

and, after standing, forms a coagulum of blood at the bottom of the vessel.

Caution. Heat or nitric acid causes coagulation of the albumen in pus.

XI. Test for *pus* by liquor potassa.

Add to the urine, or preferably to its deposit from standing, an equal volume of *liquor potassa*; when well mixed, a *viscid gelatinous fluid* or mass is formed, which pours like the white of an egg, or jelly.

XII. Test for *bile* by "fuming" or red nitric acid.

Allow a specimen of urine and a few drops of red "fuming" *nitric acid* to gradually intermingle on a porcelain dish, and a "play of colors," *green, blue, violet, red* and *yellow* or *brown*, occur, if biliary coloring matter be present.

XIII. Test for *bile pigment* by pure hydrochloric and pure nitric acids (Heller's).

Pour into a test tube about 1.6 f3 of pure *hydrochloric acid*, and add to it, drop by drop, just sufficient *urine* to distinctly color it. The two are mixed. Then drop down the side of the test tube pure *nitric acid*, which will "underlay" the mixture of hydrochloric acid and urine. At the point of contact between the mixture and the colorless nitric acid a handsome "play of colors" appears." If the "underlying" nitric acid is now stirred with a glass rod, the set of colors which were superimposed upon one another will appear alongside of each other in the entire mixture, and should be studied by transmitted light.

If the hydrochloric acid, on addition of the biliary urine, is colored *reddish-yellow*, the coloring matter is *bilirubin*; if it is colored *green*, it is *biliverdin*.

XIV. Test for *sugar*

Add to the urine half its volume of *liquor potassa*. (*Caution.* This may give a white, flaky precipitate of the earthy phosphates, which should be removed by filtering.) Now

by liquor potassa and heat (Moore's).

XV. Test for *sugar* by subnitrate of bismuth, liquor potassa and heat.

XVI. Test for *sugar* by a solution of cupric sulphate, liquor potassa and heat (Trommer's).

XVII. Quantitative test for *sugar* by Pavy's solution, to wit:—

R.

Cupric sulphate, gr. 320
Neutral potassic
tartrate..... gr. 640
Caustic potash... gr. 1280
Distilled water... f 3 20
Keep corked.

boil; this causes, at first, a *yellow-brownish* color, becoming *darker* if much sugar is present, due to glucic, and finally to melassic acid.

Add to the urine half its volume of *liquor potassa*, and then a little *bismuth subnitrate*, shake and thoroughly *boil*; the presence of sugar reduces the salt and *black metallic bismuth* is deposited, or if but little sugar, a *gray deposit* occurs.

Caution. Albumen must be absent.

Add to the urine a few drops of a solution of *cupric sulphate*, and then its own volume of *liquor potassa*. (*Caution.* On first addition a light greenish precipitate occurs, which, on further addition of the reagent, if sugar or certain other organic matters are dissolved, giving a transparent blue liquid.) Now *boil*, and a *yellowish* precipitate of *hydrated cupric suboxide*, occurring at once, denotes the *presence of sugar*.

Caution. Albumen must be absent.

Take of Pavy's solution of *cupric protoxide*, recently prepared (see margin), 200 minims or a multiple of this quantity, and *boil* in a porcelain dish; while boiling, add, minim by minim, from a measured portion of the 24 hours' urine, and it gives a *yellowish* precipitate of *hydrated cupric suboxide*, if sugar be present.

Note *carefully* the gradual disappearance of the *blue color*, and when *completed* (best determined by looking through the margin of the fluid against the white porcelain dish), from the amount of urine used, determine the amount of sugar passed daily. *The quantity of urine containing one grain of sugar being just sufficient to reduce the 200 minims of the copper solution.*

XVIII. Quantitative test for *sugar* by fermentation and the specific gravity.

Take *two* measured specimens from the 24 hours' urine, and to *one* add a little *yeast*. Place each specimen in a temperature of 75° to 80° Fah.; in 24 hours, *fermentation* having destroyed the *sugar* in the *one* containing the *yeast*, the difference in the *specific gravity* of the two specimens expresses the number of grains in each ounce of the urine. Approximately.

CONGESTION OF THE KIDNEYS.

Synonyms. Renal hyperæmia; catarrhal nephritis.

Definition. An increase in the amount of blood in the vessels of the kidneys; when arterial, it is termed *active congestion*; when venous, *passive congestion*; characterized by pain, frequent desire for urination, the amount of urine scanty, high-colored, occasionally containing albumen or blood.

Causes. *Active*; from cold; irritating substances eliminated by the kidneys, to wit: turpentine, copaiba, cantharides; during the eruptive or continued fevers; injuries over the kidneys.

Passive; obstructive diseases of the heart or lungs, and pressure of the pregnant uterus.

Pathological Anatomy. The kidneys enlarge and increase in weight; increased redness (the color being bluish if *passive*), with points of vascularity, corresponding to the Malpighian bodies, and occasionally minute ecchymoses. The abnormal hyperæmia causes a catarrhal state of the ducts of the pyramids, with shedding of their epithelium.

If mechanical (*passive*) obstruction continues for some time, increase of the connective tissue, with consequent induration and contraction results, or a form of chronic Bright's disease.

Symptoms. *Active variety*; pain over kidneys and following the course of the ureters into the testicles and penis, *irritable bladder*, almost constant and pressing desire for urination, the *urine scanty, high-colored*, and occasionally bloody, with fibrin, casts and albumen.

If the condition persist, *inflammation* of the kidney results.

Passive; the kidney changes are masked by the *lung* or *heart* trouble, until *dropsy, scanty, high-colored, albuminous* urine is observed.

Prognosis. *Active*; if recognized and properly treated, favorable.

Passive, controlled by the cause, and if prolonged, terminating in *interstitial nephritis*.

Treatment. Rest of the body; dry or wet cups over the loins; dilute the urine by increasing the quantity of bland fluids consumed; *saline purgatives*; warm bath or other mild diaphoretics; if great *irritability of the bladder*, *camphora*, gr. ij–iv, every four hours, combined with *morphine sulph.*, gr. $\frac{1}{2}$ – $\frac{1}{6}$, or the hypodermatic injection of *morphina*, gr. $\frac{1}{2}$.

ACUTE BRIGHT'S DISEASE.

Synonyms. Acute desquamative nephritis; acute parenchymatous nephritis; acute tubal nephritis.

Definition. An acute inflammation of the epithelium of the uriniferous tubules; characterized by fever, scanty, high-colored or smoky urine, dropsy, with more or less constant nervous phenomena, the result of acute uræmia.

Causes. The young more liable than the aged; cold and exposure; scarlatina; persistent use of irritants, to wit: turpentine and cantharides.

Pathological Anatomy. The kidneys are generally swollen, engorged, more vascular, and of a red color; in the second stage the organ remains large, irregularly red, especially the cortex; the tubules are engorged and filled with epithelium, blood corpuscles and fibrin. The capsule is easily detached, and is more opaque than normal.

If a favorable termination, the swelling lessens, the vascularity diminishes, the tubules returning to a normal condition.

Symptoms. Usually begins suddenly. *Fever*, with *nausea* and *violent* and *persistent vomiting*, dull *pain* over the kidneys, following the ureters; *skin* harsh and dry; *pulse* quick, tense and full. Soon *dropsy* appears, the eyelids and face becoming puffy and swollen, followed by general œdema of the extremities, scrotum and abdominal walls. If the attack follow scarlatina there are from the onset much greater pallor and general debility.

The *urine* is of high specific gravity, scanty, smoky (like beef washings) in color, due to the presence of *blood*. *Albumen* is present in large quantities, and the microscope reveals *casts* of the uriniferous

tubules, blood corpuscles, uric acid, urates and oxalate crystals and epithelium.

Duration from one to four weeks.

Complications. *Pericarditis, pleuritis, pneumonitis, peritonitis, or acute uræmia*, from retention and decomposition of urea in the blood.

Diagnosis. The history, fever, scanty, smoky, albuminous urine, with dropsy beginning in the face, should prevent any error.

Albuminuria may be confounded, on account of the presence of albumen in the urine, but lacks the clinical history, usually occurring in the course of some constitutional affection, to wit: diphtheria, cholera, yellow fever or erysipelas.

Prognosis. Favorable. Majority of cases recover under prompt treatment. Rarely passes into chronic Bright's disease. *Uræmic* symptoms add to the gravity of the prognosis.

Treatment. Absolute *rest in bed*. *Milk diet*, or if much depression, also weak *animal broths* and *oysters*. Drink freely of *water*, but neither tea, coffee nor stimulants. *Counter-irritation* over the kidneys by dry or wet cups, and poultices of *digitalis*.

For the dropsy, *purgation* by *pulv. jalapæ comp.*, ʒj, in water, before breakfast, or *elaterium*, gr. $\frac{1}{2}$.

Diaphoresis by warm baths, or *infusum pilocarpi*, ʒj-ij, every three or four hours, or *vinum ipecacuanhæ*, gtt. j-ij, every half hour.

Diuresis, by—

R.	Potass. acetat.....	gr. x-xx	
	Infus. digital.....	fʒ ij	
	Infus. juniperi.....	fʒ ij.	M.
Every two or four hours.			

As soon as the blood disappears from the urine, a course of *ferrum*, in the shape of *Basham's mixture*, until albumen disappears and health is restored. The following is the formula of Basham's mixture :—

R.	Liq. ammon. acetat.....	fʒ vj	
	Acid. acetic.....	ʒ iij	
	Tinct. ferri chlor.....	fʒ v	
	Alcoholis.....	ʒ ij	
	Syrup	fʒ iv	
	Aquæ	fʒ iv.	M.
SIG.—Dose fʒ j-fʒ j.			

CHRONIC PARENCHYMATOUS NEPHRITIS.

Synonyms. Chronic Bright's disease ; chronic tubal nephritis ; chronic albuminuria ; large white kidney.

Definition. A chronic inflammation of the cortical and tubular structure of the kidneys ; characterized by albuminous urine, dropsy, increasing anæmia, with attacks of *acute uræmia*.

Causes. Occasionally follows the acute form ; syphilis ; chronic malaria ; chronic alcoholism ; chronic mercurialism ; lead poisoning ; protracted suppuration.

It is a disease of the young, rarely occurring after forty.

Pathological Anatomy. A large white, or yellowish-white, smooth kidney often twice the normal size. The capsule is nowhere adherent to the organ. Upon section, considerable tumefaction of the cortical substance and the rarity of vascular striæ are recognized. The medullary substance shows no appreciable alteration, its color being normal. The convoluted tubes are irregularly dilated and thickened, and filled with broken-down, granulated epithelium and fibrinous casts. In pronounced cases there is fatty degeneration of the tubular epithelium.

"The intertubular matrix is greatly thickened—a change due to hyperplasia of the connective-tissue elements, to the migration of the white corpuscles and their subsequent multiplication and fatty transformation, and to a quantity of fluid exudation, the product of the increased pressure in the veins."

Symptoms. The onset is gradual and insidious, and the affection is seldom recognized until the appearance of *dropsy*, which, beginning under the eyes and in the face, extends all over the body, causing *dyspnœa* from *ascites* or *hydrothorax*. The *urine* is scanty, high-colored, *albuminous*, and under the microscope showing hyaline and granular *tube casts*, granular epithelium, and if fatty degeneration occur, *fatty tube casts* and oil globules. The increase above the normal amount of the urine as the disease progresses must not be forgotten, when the specific gravity is low, 1.010–1.015, and the quantity of albumen is increased.

Anæmia is pronounced, from the large waste of albumen. *Gastro-intestinal* disorders and vague *neuralgic pains* are common occurrences. *Cardiac hypertrophy* is of common occurrence. *Bronchial catarrh*, with slight *œdema of the larynx*, causing *husky voice*, are frequent complications. *Amaurosis*, the result of *neuro-retinitis*,

occurs in a greater or less degree in all pronounced cases. *Uræmic* symptoms occur, and especially *uræmic asthma* (renal asthma).

Complications. Pneumonitis, pleuritis, pericarditis, peritonitis, and meningitis.

Prognosis. Not unfavorable, unless urine persistently contains a large number of *fatty tube* casts and *oil globules*. Relapses are frequent, but many complete (?) recoveries are recorded.

Treatment. It is to be borne in mind that the course of a case of chronic Bright's disease is not continuously downward; periods of remission often follow the most aggravated symptoms, the patient and his friends being buoyed into the hope of an early and complete recovery, when, as suddenly, an attack of acute uræmia terminates life.

Rest and *diet* are important elements in the treatment.

A patient with chronic Bright's disease should, as far as possible, be relieved from all cares of business and spend a goodly portion of time in bed.

The *diet* should be entirely, or as nearly so as possible, a *milk diet*, the daily amount used being from two to four quarts. The moderate use of a light wine is at times of advantage if taken with the food, although a fair number of cases do better without stimulants.

The use of *diaphoretics* and *hydragogue cathartics* are only indicated when the dropsy is marked, the skin harsh and dry, the urinary secretion scanty and uræmic symptoms are threatening.

Diuresis should be promoted, if the secretion is small, by *digitalis*, *caffein* or *arbutin* internally, and dry cups and poultices over the loins.

The *anæmia* is to be treated by *oleum morrhucæ*, *arsenicum* and *ferum*, an excellent formula for the latter being—

R.	Strychninæ sulph.....	gr. ¼	
	Tinct. ferri chloridi.....	f 3 ss	
	Acidi acetici puræ.....	f 3 iss	
	Curacoæ alba.....	f 3 j	
	Liq. ammonii acetat.....ad.....	f 3 vj.	M.

SIG.—Tablespoonful every five hours, followed by a glass of cold water.

To check the waste of *albumen*, a difficult matter, the following remedies have been used with more or less success: *ergota*, *quinina*, *acidum gallicum*, *acidum benzoicum*, *tinctura cantharidis*, *potassii*,

iodidum, and, lastly, the Russian remedy, *blatta orientalis* (cockroach).

For *dropsy*, purgatives, such as *pulvis jalapæ compositus*, *hydragogue cathartics* and alkaline mineral waters. If there be great distention of the serous cavities, interfering with the respiration, the *aspirator* should be used. Puncture of the skin may be necessary at times, and is well accomplished with an ordinary cambric needle.

Cases due to *syphilis*, if the loss of renal structure is slight, are cured by a course of *hydrargyri corrosivum chloridum* and *potassii iodidum* with *oleum morrhue*.

INTERSTITIAL NEPHRITIS.

Synonyms. Chronic Bright's disease; sclerosis of the kidneys; contracted kidneys; small red kidney; gouty kidney.

Definition. An inflammation of the intervening connective tissue of the kidney, chronic in its progress, resulting in an induration or hardening, with contraction of the organ; characterized by frequent passing of large amounts of pale, albuminous urine, of low specific gravity, disorders of the gastro-intestinal and nervous systems, and a strong tendency to cardiac hypertrophy and changes in the vessels.

Causes. A disease of middle life, from forty to sixty years. Gout a very common cause; lead cachexia; syphilis; alcoholism; alterations in the renal ganglionic centres (DaCosta and Longstreth).

Pathological Anatomy. The *kidneys* are reduced in size. The *capsule* is thickened, opaque and adherent. The *surface* of the kidney is granular, with cysts of various sizes, of transparent color, irregularly over the surface. On section the *tissue* of the kidney is tough and resistant. The *cortical* portion is thin, from atrophy, being only a line or two in thickness. The *connective tissue* is greatly thickened, compressing the tubules into mere threads, the *glomeruli* being grouped together in bunches, owing to the wasting of the intermediate tubes. The *color* varies, from a darkish-brown to a yellowish-gray, according to the amount of blood in the organ.

The left side of the *heart* is hypertrophied, and there is also hypertrophy of the muscular fibre of the *arterioles* throughout the body; if the case is protracted the hypertrophied tissues undergo fatty degeneration.

In many cases there occur fatty degeneration of the retinal tissues, or sclerosis of the nerve-fibre layer, changes which are termed *retinitis albuminuria*.

The "*ganglionic centres*" undergo fatty degeneration and atrophy (DaCosta and Longstreth).

Apoplexy is a frequent termination of interstitial nephritis, the rupture of a cerebral vessel suggesting it to be a disease of degeneration.

Symptoms. Onset insidious, and often marked alterations in the kidneys, heart and vessels have occurred before the disease is recognized.

Any of the following symptoms may first attract attention, to wit : *frequent micturition*, *increased amount of urine*, of a *pale color*, containing a small amount of *albumen*, which may be absent for days, occasional *epithelial cells* and *hyaline casts*. No dropsy, but a little *puffiness* and *œdema* of the *conjunctiva*—the Bright's eye. *Disorders of vision*. *Forcible cardiac action* with *high arterial tension*. And any of the following symptoms, the result of *uræmia* : Persistent *dyspepsia*, occasional *vomiting*, regardless of food ; *headache*, *vertigo* and *stupor*, or *drowsiness* ; violent *itching* of the skin ; *tremors*, *convulsions*, *epileptic seizures*, or *apoplectic attacks*.

The body weight declines, the skin is dry and scurfy, the strength fails, and shortness of breath on exertion is present.

The *termination* is usually by convulsions, coma and death.

Complications. Bronchitis ; pneumonia ; pleuritis ; pericarditis.

Diagnosis. Differs from *parenchymatous nephritis* in the following : large quantity of urine, clear, of low specific gravity, small amount of albumen, with few hyaline casts ; the hypertrophied heart and tense arteries and marked disorders of vision.

Prognosis. Pursues a very chronic course ; cases recorded under observation eleven years ; but the termination is always fatal.

Treatment. Regulated diet. Diaphoretics. Diuretics. Avoid alcoholic stimulants. As nearly absolute rest as patient's general health will permit.

To prevent the growth of the connective tissue, the following remedies are recommended, to wit : *potassii iodidum*, *hydrargyri corrosivum chloridum*, gr. $\frac{1}{20}$, *aurii et sodii chloridum*, gr. $\frac{1}{20}$, *ferri iodidum* and *arsenicum*.

For *uræmia*, if patient is conscious, *purgatives*, *diaphoretics* and *diuretics*. If unconscious, *morphina* hypodermatically or *chloroform* inhalations.

AMYLOID KIDNEY.

Synonyms. Chronic Bright's disease ; waxy kidney ; lardaceous kidney.

Definition. A peculiar infiltration into, or a degeneration of, the structure of the kidney, from the deposit of an albuminoid material, having a superficial resemblance to starch granules. Similar changes occur in the liver, spleen, intestines, and other organs.

Causes. The chief cause is prolonged suppuration, especially of the bones ; coxalgia ; syphilis ; cancer.

Pathological Anatomy. The kidney is uniformly enlarged. It presents a pale, glistening, translucent appearance, and has a doughy consistency. On section, the surface is homogeneous, anæmic and whitish. The deposit occurs along the renal vessels and in the vascular tufts of the glomeruli, progressing until all parts of the organ are infiltrated. When the organ is thus infiltrated, the proper structure undergoes an atrophic degeneration, the result of pressure.

The reaction with iodine and sulphuric acid affords a certain test of the *amyloid* deposit. Brush over a section of the affected kidney a solution of iodine with iodide of potassium in water, when a mahogany color will be produced, and if diluted sulphuric acid is now added, a violent or bluish tint results. A very pretty reaction is to take a one per cent. solution of anilin violet, which strikes a red or pink color with the amyloid material, while the unaltered tissues are stained blue, making a beautiful contrast.

Similar changes occur in other organs of the body. With the amyloid change may be associated either parenchymatous or interstitial nephritis.

Symptoms. Associated with *wasting* are *œdema* of the lower extremities and *ascites*, with an *increased flow of urine*, pale, watery and of low specific gravity, containing *albumen* and *hyaline casts* which are transparent. If the amyloid change be associated with other forms of renal change, the urine will show the characteristics of such condition. A profuse, watery and persistent *diarrhœa* adds to the suffering, caused by amyloid changes in the intestinal canal.

Diagnosis. Differs from *parenchymatous nephritis* in its clinical history, and the fact of its always being associated with a suppurating disease.

From *interstitial nephritis*, in its history, character of the urine, *absence* of uræmia, cardiac hypertrophy, changes in the vessels, and the fact of its association with suppurating diseases and similar changes in other organs.

Prognosis. Controlled by the suppurating disease with which it is associated; the termination, when the amyloid change is fully developed, is unfavorable, death occurring within a few months, or under favorable conditions, not for one or more years.

Treatment. Sustaining and symptomatic in character. Generous diet, and the persistent use of *ferrum* and *oleum morrhue*.

If caused by syphilis, a thorough course of *potassii iodidum*, *ferri iodidum* and *hydrargyri corrosivum chloridum*, with *oleum morrhue*.

PYELITIS.

Synonyms. Suppurative nephritis; pyelo-nephritis.

Definition. An acute catarrhal inflammation of the pelvis of the kidney; the term *pyelo-nephritis* is used when suppurative inflammation is superadded to the catarrhal inflammation. The disease is characterized by lumbar pains, irritability of the bladder, the urine neutral, or alkaline in reaction, and milky in appearance; if *pyelo-nephritis* occur, symptoms of hectic fever and exhaustion are added, the urine containing pus.

Causes. Cold, or exposure; cystitis; obstruction of the ureters by renal calculi; pressure from a tumor.

Pathological Anatomy. The inflammation is *catarrhal*; it is characterized by injection of the mucous membrane of the pelvis of the kidney, with slight extravasations of blood; relaxation and softening, shedding of the epithelium, and the subsequent discharge of mucus and pus. If the morbid condition has existed for some time, the kidneys, one or both, are in a process of suppuration, they are enlarged, deeply congested, except where suppuration is proceeding, when they are of a yellowish-white color—*pyelo-nephritis*. Pus is constantly forming, and, if there be no obstruction, flows away with the urine; should there be an impediment to its escape, pus accumulates in the pelvis of the kidney, causing its distention, giving rise

to the condition known as *pyelo-nephrosis*. The pressure caused by the obstruction finally leads to destruction of the entire organ, a mere sac, or *renal cyst* remaining.

Symptoms. If caused by *cystitis*, symptoms of this condition occur first; if from *renal calculi*, its characteristic symptoms precede those of *pyelitis*.

Begins by *chilliness*, *feverishness*, *lumbar pains* following the course of the ureters, *frequent micturition*, the *urine milky* in appearance when voided, *acid* or *neutral* in reaction, and depositing a copious sediment, whitish or yellowish-white in color, containing only a small amount of albumen, no more than is due to the *pus*.

If *pyelo-nephritis* follow, symptoms of *pyæmia* supervene, to wit: *fever*, typhoid in character, low, muttering *delirium*, *subsultus tendinum*, *stupor*, decline in strength, and loss of flesh, with perhaps a *tumor* in the lumbar region.

If both kidneys are affected *uræmic* symptoms are frequent.

Diagnosis. From *cystitis*, by history, lumbar pains and *acidity* of purulent urine, the urine in *cystitis* being always *alkaline*.

Peri-nephritis, a disease of loose tissue, around about the kidneys, terminating in abscess, causing lumbar pain, increased by motion or pressure, hectic fever, sense of fluctuation over kidneys, the *urine remaining normal*.

Prognosis. Simple cases, where no obstruction to flow of pus, *recover* in a week to ten days. If obstruction of the ureter, the prognosis is grave. Suppurative cases unfavorable.

Treatment. Rest in bed. Milk diet. Free use of water to dilute the urine, and free diaphoresis. *Quinina* to keep down temperature, prevent formation of pus, and maintain the powers of life.

To change the character of the secretion, Prof. DaCosta strongly recommends *pix liquida*; other remedies are *oleum santali*, *copaiba*, *eucalyptol*, *terebinthina* and *cubeba*.

If *abscess* results, *aspiration*, *quinina* and *stimulants*.

ACUTE URÆMIA.

Synonyms. Uræmic poisoning; uræmic intoxication; uræmic coma; uræmic convulsions.

Definition. A group of nervous phenomena, which occasionally develop during the course of acute or chronic Bright's disease, and

other maladies, the result of the retention or accumulation in the blood of an excrementitious material, supposed to be *urea*; the flow of urine being either normal, lessened or increased.

Causes. Suppression of urine, from acute or chronic Bright's disease; cystic, tubercular or cancerous kidney; the puerperal state; operations on the uterus, bladder, urethra or rectum.

Symptoms. Uræmic intoxication is the result of the failure of the kidneys to perform their normal function of eliminating some one or all of the poisonous elements of the urine.

The toxæmia may develop suddenly, by a *convulsive* seizure followed by *coma*, or slowly and gradually. Usually the attack is preceded by a decrease in the urinary secretion; although it must be borne in mind that in rare instances, during, or immediately prior to, the appearance of the uræmic phenomena, the normal urinary flow has been largely exceeded.

The onset is usually with *headache*, *dimness of vision*, dilated, sluggish pupils, *drowsiness*, *vertigo*, *deafness*, dusky countenance, *nausea*, *vomiting*, and either a *chill* followed by *fever*, or a *cool skin* from the onset; the *mind is dull*, deepening into *stupor*, to be followed by *coma*, or *convulsions* precede the coma, which terminates in death, unless the poison causing the attack is rapidly eliminated. If the amount of accumulated urea is small the phenomena may not approach the pronounced coma described, the patient being able to be aroused. When *convulsions* occur they rapidly succeed one another, consciousness seldom being complete between the fits.

Diagnosis. *Cerebral apoplexy* may be mistaken for uræmic coma, or the reverse. The chief points of distinction are, in the latter the attack is usually in patients suffering from dropsy, and that the coma is not sudden in its appearance, but is generally preceded by other nervous phenomena, such as headache, vertigo, dimness of vision, obstinate vomiting, and convulsions. Again, the *uræmic stertor* is a sharp, hissing sound, whilst that of apoplexy is "snoring." Apoplexy is followed by paralysis, uræmic coma is not.

An *epileptic* seizure is preceded by the sharp cry and extreme pallor of the face, the countenance being dusky in uræmic convulsions.

Prognosis. An attack of acute uræmia is always a very grave condition. The prognosis depends upon the amount of retained poison, the length of time it has been retained, and the condition of the organs of elimination.

Treatment. The indications in acute uræmia are: *first*, to arrest the nervous phenomena; *secondly*, to promote elimination. Prof. Loomis has succeeded in meeting both of these indications by hypodermatic injections of *morphina*, gr. $\frac{1}{6}$ – $\frac{1}{4}$ – $\frac{1}{2}$, repeated, if needed, every two hours. He says, “the most uniform effect of morphine so administered is, first, to arrest muscular spasms; second, to establish profuse diaphoresis; third, to facilitate the action of cathartics and diuretics, especially, the diuretic action of *digitalis*.”

Following the injection of morphina, *diaphoresis* should be promoted by means of the *vapor-bath*, or the *hot wet-pack*, or the hypodermatic use of *pilocarpinæ hydrochloras*, gr. $\frac{1}{12}$ – $\frac{1}{6}$ – $\frac{1}{4}$, provided no counter-indication to its use exists.

The *convulsive* phenomena are rapidly controlled by inhalations of *chloroformum*.

Diuresis should be promoted by *infusum digitalis*, and *dry* or *wet cupping*, and poultices over the loins.

Catharsis is best produced by *elaterium*, gr. $\frac{1}{12}$ – $\frac{1}{8}$.

RENAL CALCULI.

Synonyms. Nephro-lithiasis; gravel; renal colic.

Definition. *Renal calculi* are concretions formed by the precipitation of certain substances from the urine, around some body or substance acting as a nucleus.

Their presence may not be recognized until one or more attempt to pass along the ureters, when an attack of *renal colic* results; or, by irritation, *pyelitis* is produced; or more rarely, they are voided by the urine without exciting any symptoms.

By *gravel* is meant very small concretions, which are often passed in the urine in large numbers.

Causes. Occur at all ages; frequent before the fifth year, and from five to fifteen. Males are more liable than females. A special liability seems to exist in some families, but the precise etiology of calculi is not yet determined.

Varieties. 1. *Uric acid*, as calculi and gravel, and especially associated with the gouty diathesis.

2. *Urates*, chiefly urate of ammonia; nearly always in childhood.

3. *Oxalate of lime* or mulberry calculus; characterized by hardness, roughness and very dark color.

4. *Phosphatic calculi* form as frequently in the bladder as in the kidney, and present a chalky or earthy appearance.

5. *Alternating calculi*, consisting of alternate layers of two or more primary deposits.

Anatomical Characters. In structure, a urinary calculus usually consists of a *central nucleus*, surrounded by the *body*, and outside of all there may be a phosphatic *crust*. The nucleus may or may not be of the same material as the rest of the stone, sometimes being a foreign body, mucus or blood.

A section generally shows a *stratified* arrangement, or it may be partly or completely *radiated*.

Symptoms. The clinical signs of renal calculi are those consequent on the results of their presence, to wit: *renal hemorrhage*, *renal congestion*, *inflammation*, terminating in *abscess*, *pyelitis* or *pyelo-nephritis*, *cystitis* or *renal colic*.

The symptoms of *renal colic* begin abruptly, by severe, agonizing *pain* in the lumbar region, following the ureters into the corresponding groin and thigh. *Pain* and *retraction* of corresponding testicle, also of glans penis. *Face pale* and *features pinched*, the surface cold and damp. Irritability of the bladder, the urine passed in drops containing some blood. So severe is the pain at times that the patient may faint or pass into unconsciousness, or have a general convulsion. If both ureters are obstructed, *uræmic symptoms* will arise.

The paroxysm usually terminates suddenly after some minutes or hours, the stone escaping into the bladder.

Prognosis. Renal calculus is attended with many dangers. It may produce extensive disorganization of the kidneys, or its passage along the ureter may prove fatal. If the stone be very large, or if more than one, the prognosis is graver. Calculus is a disease very apt to recur. Renal sand (*gravel*) and small concretions may, after more or less delay, be voided with the urine.

Treatment. An attack of *renal colic* is best relieved by a hypodermatic injection of *morphina* and a warm bath or a suppository of *ext. opii*, gr. j, *ext. belladonnæ alco.*, gr. ss., repeated if needed.

For attacks of *gravel*, *liquor potassii citratis*, fʒss, every three hours, and, if much *vesical irritability*, adding *tinct. opii camph.*, fʒss-j.

For *renal hemorrhage*, Prof. Bartholow reports success with

R. Extracti ergotæ fluidi,
Tincturæ krameriæ.....āā..... ʒij. M.
SIG.—ʒj every two or more hours.

For *uric acid calculi*, as a solvent, Buffalo Lithia Springs Water or the Rockbridge Alum Springs Water of Virginia, or *potassii tartraborates*, "obtained by heating together four parts of cream of tartar, one part of boracic acid, and ten parts of water. A scruple may be given three or four times a day, in water, largely diluted."

For *phosphatic calculi*, as a solvent, *ammonii benzoas*, well diluted and long continued.

CYSTITIS.

Synonym. Catarrh of the bladder.

Definition. An inflammation of the mucous membrane lining the urinary bladder, acute or chronic in its course, and of either a catarrhal, croupous or diphtheritic character; characterized by rigors, moderate fever, hypogastric pain, frequent but scanty micturition and severe vesical tenesmus, the urine containing pus.

Causes. *Acute variety*; long retention of urine; foreign bodies in the bladder; pyelitis; urethritis; blows over the pubes; myelitis, and secondary to fevers or diphtheria. *Chronic variety*; following the acute variety; retention the result of enlarged prostate or an urethral stricture; calculi; gout; chronic Bright's disease.

Pathological Anatomy. In *acute catarrhal cystitis*, there first ensues hyperæmia of the mucous membrane of the entire or a portion of the bladder, manifested by redness, swelling and œdema; followed by an increased secretion of the small glands at the base of the bladder, and an increased growth and consequent desquamation of the vesical epithelium, together with a copious generation of young cells; if the hyperæmia be decided, rupture of the capillaries and extravasation of blood occur.

If the inflammation be intense suppuration of the sub-mucous connective tissue may result, and ulceration of the mucous membrane permit the sub-mucous abscesses to empty into the bladder.

If the inflammation be of a croupous or diphtheritic character, the morbid anatomy does not differ from the same variety of inflammations in other mucous membranes.

In *chronic cystitis* "the mucous membrane is thick, blue gray in color, and very tough. Muco-pus and viscid mucus are formed in large quantities upon its surface. The muscular wall of the bladder may sometimes be half an inch thick, and the fasciculi give a ribbed appearance to the internal surface, called the 'columnar bladder.' The hypertrophy of chronic cystitis may be eccentric or concentric. In some cases diverticuli are formed, in whose walls are dilated and tortuous veins. In nearly all cases bacteria are found in abundance." (Loomis.)

Symptoms. *Acute cystitis*; the onset is usually abrupt, by *rigors*, slight *fever*, loss of appetite, sleeplessness, a feeling of depression; *frequent micturition*, but the *urine* is only voided drop by drop, its passage followed by distressing *vesical tenesmus*, the result of spasm of the bladder; *pain* over the pubis and in the iliac regions, of a dull character, at times becoming sharp and agonizing; *burning along the urethra* adds to the distress of the patient.

The *urine* is cloudy, of an *alkaline* reaction, and at times is *fetid*, the microscope showing *epithelium*, *pus* and *red blood corpuscles*.

Chronic cystitis; the onset is gradual and insidious, and is excited by some obstacle to the evacuation of the urine, such as stricture, the presence of a stone in the bladder, or enlargement of the prostate gland. There are present dull *pain*, *frequent* but *scanty micturition*, the *urine* is *alkaline*, containing large amounts of *muco-pus* or *pus*; on standing, it deposits a thick, glairy, viscid sediment, in which, under the microscope, triple phosphates and large pus corpuscles, extremely regular both in contents and in shape, may be detected.

Although the quantity of urine voided by the patient is small, yet if immediately after micturition the catheter is used, several ounces of *fetid*, *cloudy*, *alkaline urine* may be removed.

Patients with chronic cystitis usually present decided constitutional debility.

Severe local pain, emaciation and occasional bloody urine, indicate ulceration of the vesical mucous membrane.

Diagnosis. *Pyelitis* has lumbar pains following the course of the ureters, frequent micturition without the severe vesical tenesmus; the urine, although cloudy, has an acid or neutral reaction.

Prognosis. The *acute variety* is, as a rule, good, being controlled by the cause.

The *chronic variety* continues for years, and after hypertrophy of the bladder is incurable.

Treatment. Rest is paramount. The diet must be restricted, all highly seasoned articles being particularly interdicted; milk is the most suitable diet.

Warm applications over the pubic region are of benefit; and leeching and cupping over the bladder are of service.

The urine should be well diluted by large draughts of pure water and particularly the alkaline mineral waters, to wit: Farmville lithia, Buffalo lithia or the Rockbridge alum, or Vichy waters. The following formulæ are of decided benefit:—

R.	Acidi benzoici,		
	Sodii borat.....āā.....	3 ij	
	Infusi buchu, vel		
	Infusi uvæ ursæ.....	f 3 vj.	M.

SIG.—Tablespoonful every 2 hours, well diluted.

Or—

R.	Liquor. potassæ.....	f 3 ss	
	Mucil. acaciæ.....	f 3 vjss.	M.

SIG.—Tablespoonful every 4 hours, well diluted.

For the *pain* and *tenesmus* relief is afforded by a suppository of *extractum opii* and *extractum belladonnæ*, repeated as needed.

The *vesical tenesmus* is often benefited by *extractum cannabis indicæ fluidum*, f 3 ss, every three or four hours.

Chronic cystitis. The bladder should be completely emptied with the catheter several times in the twenty-four hours.

The use of *eucalyptol*, gtt. x-xv, every four hours, well diluted, and washing out the bladder with the following mixture, has been of decided benefit in the hands of the author:—

R.	Sodii borat.....	3 j	
	Glycerini.....	f 3 ij	
	Aquæ.....	f 3 ij.	M.

SIG.—f 3 ss-iss added to warm water and injected into the bladder once or twice daily.

The diet should be nutritious, but without spices of any kind. The free use of the alkaline mineral waters is of advantage.

ACUTE GENERAL DISEASES.

PAROTITIS.

Synonym. Mumps.

Definition. An acute specific *infectious* inflammation of one or both parotid glands, with a very strong tendency to migrate into the mammæ or testes; characterized by pain, swelling and disordered function of the gland.

Causes. A specific poison. Occurs in epidemics, although isolated cases are seen. Males more liable than females. The most common ages between five years and puberty. As a rule, it occurs but once in the same individual.

The *period of incubation* is from two to three weeks.

Pathological Anatomy. There is inflammation of one or both parotid glands, and in severe epidemics the cellular tissue pervading the gland is involved.

The catarrhal inflammation begins in the gland ducts and rapidly extends to the gland proper. There is congestion, swelling and an infiltration of serous fluid, with more or less infiltration of the adjacent tissues. The swelling may suddenly reach an enormous size and as suddenly decline, the gland returning to its normal condition, or, rarely, an abscess results, with partial or complete destruction of the gland. Occasionally the submaxillary gland is involved, also the mammæ and testes.

Metastatic parotitis occurs secondary to severe blood poisoning, as in pyæmia, typhoid or typhus fevers or diphtheria. The usual termination of secondary parotitis is by suppuration and destruction of gland structure.

Symptoms. The onset is rather sudden, by *malaise, chill, fever, 101°-103° F., quick pulse, headache, dry skin, scanty urine*, followed within a day or two by *stiffness* at the angles of the jaw, *swelling* of the *parotid, pain*, increased by moving the jaws, with *general œdema* of the affected side of the face, at times the *skin* being *reddened*. *Salivation* is frequent, and occasionally deafness occurs.

The swelling and other glandular symptoms subside about the sixth or seventh day, to be followed by restoration to health, or what is more common, the involvement of the *opposite gland*.

At any time during the disease *metastasis* to the *mammæ, ovaries* or

testes is apt to occur, when the symptoms peculiar to such affection will be added. It has been noted that a *continuance* of the *temperature* after the decline of the parotid symptoms has begun, usually is significant of *metastasis*.

Diagnosis. An error seems impossible.

Prognosis. Simple mumps, favorable; the chief danger being from the altered function of the *mammæ*, ovary or testes after *metastasis*.

Treatment. The disease being self-limited, the indications are entirely symptomatic, with attention to the secretions, although *extractum pilocarpi fluidum*, $\text{m}_\text{x-xxx}$ repeated, has been used with varying success as a specific.

Locally, warmth to the affected gland may be agreeable.

DIPHTHERIA.

Synonyms. Putrid sore throat; malignant ulcerous sore throat; malignant quinsy; membranous angina.

Definition. An acute, specific, constitutional disease, both *epidemic* and *contagious*, beginning by an affection of the throat, characterized by a local exudation and glandular enlargements; attended with great prostration of the vital powers and albuminuria, and having for its sequelæ various paralyses.

Causes. A *specific poison*, the character of which is unknown. It is preëminently a disease of childhood. It is apt to recur in those who have once been affected. All conditions of bad hygiene increase its virulence and diffusion, although the chief cause of its spread is *contagion*.

The poison exists in the exudations and secretions of the fauces and in the breath, and floats in the atmosphere at a considerable distance from the original source.

The theory of "No bacteria, no diphtheria," is not proven.

The *period of incubation* is from three to five days.

Pathological Anatomy. The *diphtheritic* inflammation differs from either the *croupous* or *catarrhal* form, in that the exudation is not only *upon*, but also *within*, the substance of the mucous membrane.

At first there is *redness*, which may begin in any part of the throat, associated with *swelling* and an *increased secretion* of viscid mucus. The redness spreads over the entire mucous surface, when the *exuda-*

tion makes its appearance. The deposit may commence from one or several points, such as on one tonsil, the soft palate, or the back of the fauces, which, however, speedily extend and coalesce, forming extensive patches, or cover uniformly the entire surface.

The patches are of variable thickness, which is increased by successive layers being formed underneath.

The *color* is usually gray, white or slightly yellow, but may be brownish or blackish, the *consistence* ranging from "cream to wash leather."

On removing the membrane, which is accomplished with more or less difficulty, a raw, bleeding surface is exposed; at times an ulcer, which is speedily covered with a fresh deposit.

If the exudation separate itself, it is either not renewed at all or only in thinner films.

The exudation or membrane, examined by the microscope, is composed of fibrin, pus corpuscles, epithelial granular cells and bacteria.

If the *larynx*, *trachea*, or *nasal* mucous membranes participate in the disease, the *croupous* and not the *diphtheritic* form of inflammation occurs.

The *lymphatic glands* of the neck, whose vessels originate in the faucial tissues, are enlarged and inflamed, and contain large numbers of *bacteria*, probably originating as the result of decomposition.

The muscular tissue of the *heart* becomes soft, is easily torn, and its fibrillæ are far advanced in granular degeneration. Ulcerative endocarditis has been frequently observed.

The *kidneys* undergo a granular degeneration in severe attacks.

The *blood* undergoes alteration, being black and fluid.

Symptoms. Following the law of *contagious* diseases, the symptoms vary in intensity in different cases, the prominent symptoms being often disproportionate to the gravity of the attack.

The *invasion* may be *mild*, with *rigors* succeeded by moderate *fever*, *headache*, *languor*, *loss of appetite*, *stiffness of the neck*, *tenderness* about the *angles of the jaw*, or *slight soreness of the throat*.

In other cases the *invasion* is more *abrupt* and *severe*, with *chilliness* followed by great *febrile* reaction, 103° to 105° F., *pain in the ear*, *aching of the limbs*, *loss of strength*, *painful deglutition* and *swelling of the neck*, compelling the patient to take to bed from the onset.

The *appetite* is poor, the *tongue* slightly coated, sometimes more or less exudation appearing upon it, the *bowels* being either regular or slightly relaxed. The *pulse*, at first full and strong, soon becomes either frequent or slow, but *compressible*. The *urine* is scanty, high colored and contains *albumen*.

The *local* symptoms in the majority of cases are associated with the throat. The patient complains of a frequent and persistent desire to hawk, in order to clear the throat. On *inspection* the fauces are seen *red* and *swollen* and more or less covered with the diphtheritic *exudation*; sometimes the *tonsils* and *uvula* are greatly *swollen* and spotted with exudation. In bad cases, more or less *ulceration* or *sloughing* may be observed. Not unfrequently fragments of exudation, the *false membrane*, are expectorated, with particles of the ulcerated tissues, having an *offensive odor*, which is transmitted to the breath. The *lymphatic glands* of the neck are *enlarged* and *tender*, and in severe cases the tissues of the neck are greatly tumefied.

Extension to the *nasal cavities* causes a *sanious* and *offensive* discharge from the nose, with attacks of *epistaxis*.

Extension to the *larynx* is indicated by *hoarseness* or *complete loss of voice*, *croupy cough* and obstructive *dyspnœa*, which often become urgent, the breathing being *noisy* and *stridulous*, and subject to paroxysmal exacerbations. If the inflammation extend to the *bronchi*, the breathing becomes still more embarrassed.

Duration. Ranges from two to fourteen days, an average being about nine days, although complications and sequelæ may prolong its course.

Relapses are not uncommon.

Sequelæ. Those who recover from a severe attack remain often for weeks with a *pale* and *cachectic* appearance, due to the profound blood alteration.

Paralysis is a common sequelæ, following the mild as often as the severe attacks. Usually not occurring until the patient seems fully convalescent.

Pharyngeal paralysis is the most common, causing difficulty or inability of *deglutition*, fluids regurgitating through the nose.

Cardiac paralysis is not unfrequent, the pulsations descending to 60, 50, 40, and in a case seen by the author, to 20 per minute.

Diphtheritic paralysis may affect the motor muscles of the eye, causing *strabismus*; the muscles of one side, *hemiplegia*; of the legs,

paraplegia; and of the bladder, leading to *retention of urine* or difficulty in passing it.

Sensation is also *diminished* in the paralyzed parts.

Diagnosis. From *follicular ulceration of the tonsils*, which is frequently termed diphtheria, by the slight or absent systemic symptoms, the ulcerated condition being limited to the tonsils, but often one, and the absence of glandular enlargement and following palsies.

From *pharyngitis*, by the absence of exudation and loss of faucial tissue and constitutional symptoms.

From *scarlatina*, by the presence of the eruption and the absence of membrane in the fauces.

From *membranous croup*, by the difference in the constitutional symptoms; croup appears sporadically and is not contagious, diphtheria being highly contagious and frequently occurs in epidemics; in diphtheria of the larynx, the depression is clearly that of blood poisoning, while in croup, the depression is in proportion to the mechanical obstruction of the respiration by the membranous exudation. The pathology of croup is simple and easy of investigation; diphtheria is obscure in its etiology and progress. The temperature record of croup is a high one until carbonic acid poisoning is imminent from the mechanical obstruction of respiration, while in diphtheria, the tendency to a decline in the temperature after the second day is nearly characteristic, regardless of the amount of laryngeal obstruction. In croup the pharynx contains no membrane, and is but slightly, if at all, inflamed, and associated trouble in the nose is of the rarest occurrence, the very reverse obtaining in diphtheria. In croup the laryngeal symptoms are from the onset, while in laryngeal diphtheria, the pharyngeal symptoms almost always precede. In croup glandular involvement is a clinical novelty, as are subsequent palsies, while glandular involvement and various palsies are the rule in diphtheria.

Prognosis. Always grave, but more so in children than in adults. Its gravity, in the majority of cases, is proportionate to the local symptoms. The average mortality is about *ten per cent*.

Favorable indications are, moderate fever, strength slightly impaired, a good constitution, and moderate exudation.

Unfavorable indications are, great depression, spreading exudation, great swelling of the cervical glands, large amount of albumen,

extension to larynx and nasal mucous membranes, hemorrhages from the fauces and nose, and an epidemic character.

Treatment. *No specific* plan of medication has been found uniformly successful. It is a disease of debility. The blood being more or less altered, it follows that *sustaining* measures must be resorted to in *all cases*.

The *diet* must be of the most nutritious character from the onset, such as milk, eggs, broths and oysters, at *intervals* of every *two or three hours*. If deglutition be too painful, resort must be had to nutritious *enemata*, the following formula being suitable :—

R.	Milk.....	f 3j	
	Spts. frumenti.....	f 3iv	
	Egg.....	One.	M.

SIG.—Little salt added, beaten up and warmed.

Stimulants must be used boldly from the onset, guiding the dose by the effect; usually, a child of two years requires from *thirty to sixty minims* of *spiritus vini gallici* or *spiritus frumenti*, every two or three hours; an adult from *two to four drachms* every three hours.

Ferrum and *potassii chloras*, in *full doses*, frequently repeated, have seemed, when begun early in the attack, to modify the course of the malady, and they have the additional advantage of acting locally upon the throat as they are swallowed. A good formula is—

R.	Tinct. ferri chlor.....	gtt. v-x-xx	
	Potassii chlor.....	gr. iiij-v	
	Glycerini.....	f 3ss	
	Syr. zingib.....ad.....	f 3j-ij.	M.

SIG.—In water every three hours, for a child of two or three years.

The efficacy of the above is greatly enhanced, in the author's experience, by the addition to each dose of *tinctura belladonnæ*, gtt. j-v.

Quinina, gr. xvj-xxiv per day for a young adult, and gr. v-x for a child, should be used throughout the disease; if irritability of the stomach prevent its administration by the mouth, it can be used as a *suppository* or locally in the form of the *oleate*.

Calomel in small doses, combined with *sodii bicarbonas* every hour until the *breath becomes fetid*, is beneficial, and especially in cases showing a tendency to spread toward the larynx. Indeed, a *tolerance* to calomel seems to exist in *diphtheria of the larynx*.

Hydrarg. chlor. corros., gr. $\frac{1}{36}$ — $\frac{1}{24}$, repeated every second or third hour, also acts well in many cases, combined as follows:—

R.	Hydrargyri chlorid. corrosiv.....	gr. $\frac{1}{48}$	
	Tinct. ferri chlorid.....	\mathfrak{m}_{v-x}	
	Glycerini.....	\mathfrak{m}_x	
	Aquæad.....	$\mathfrak{z}j$.	M.

SIG.—One teaspoonful every hour or two, well diluted.

Locally. Cleanliness of the fauces is of the utmost importance, and if a *non-irritating disinfectant* be added, its value is enhanced. Prof. Bartholow “has seen excellent results from the frequent application of a solution of *acidum lacticum*, strong enough to taste sour, by means of a mop.” The following, used as a *gargle*, or applied by a mop, is useful:—

R.	Acid. salicyl.....	gr. xx	
	Glycerini.....	f $\mathfrak{z}j$	
	Aquæ destil.....	f $\mathfrak{z}iij$.	M.

Or—

R.	Potass. chloras.....	$\mathfrak{z}iv$	
	Acid. carbol.....	gr. ij—iv	
	Tinct. myrrh.....	$\mathfrak{z}j$	
	Inf. cinchonæ.....	$\mathfrak{z}ij$.	M.

Or—

R.	Ext. pancreatis.....	$\mathfrak{z}j$	
	Sodii bicarb.	$\mathfrak{z}iij$.	M.

SIG.—Add $\mathfrak{z}j$ to aquæ $\mathfrak{z}vj$, and apply with camel’s-hair pencil.

Inhalations of steam and hot water, and allowing the patient to suck pellets of ice, give relief. Sponges dipped in hot water and applied to the angles of the jaw are beneficial.

For *laryngeal diphtheria* the same general treatment, especially the *mercurial*, with *inhalations* of lime by slaking freshly-burned lime in a vessel and directing the vapor to the child by a newspaper, or some similar contrivance, or using three parts of *liquor calcis* and one part of *glycerin*, in an *atomizer*, every half hour or hour, or *liq. trypsin*, as a spray. If these means fail, resort must be had to *tracheotomy*, which has succeeded in many desperate cases.

For *nasal diphtheria* the same general treatment, and syringing the nose every two or three hours with a weak solution *potassii chloras*, or *acidum carbolicum*, or the following:—

R.	Sodii sulphit.....	$\mathfrak{z}iij$	
	Glycerini.....	f $\mathfrak{z}ij$	
	Aquæ.....	f $\mathfrak{z}iv$.	M.

For the *paralysis, strychnina* and *ferrum* internally, or *strychnina* hypodermatically, with the *galvanic current* locally.

ACUTE ARTICULAR RHEUMATISM.

Synonyms. Rheumatic fever; inflammatory rheumatism.

Definition. A constitutional disease, characterized by fever, inflammation in and around the joints, occurring in succession, and a great tendency to inflammation of either the endocardium or pericardium.

Causes. The *predisposing* causes are inherited tendency, scarlatina, and the puerperal state.

The *exciting* causes, exposure to cold and chilling of the body. Rheumatism rarely occurs before seven or after fifty years. The liability to the disease is increased by having had an attack.

Pathological Anatomy. The *blood* contains an excess of *lactic acid*. The *joints* bear the brunt of the attack; the synovial membrane is reddened, the vascularity of the synovial fringes is increased, so with the synovial fluid, which is thinner, of a reddish color, containing some gelatinous coagula of fibrin, and under the microscope nucleated cells, ordinary pus cells being rarely seen.

The swelling visible about the affected part depends mostly on inflammatory œdema of the connective tissue around the joint.

The *pain* is probably due, in all cases, to stretching of and pressure on the elements of the tissues by the dilated capillaries and the inflammatory œdema. For the changes which ensue when the endo- and peri-cardium are attacked, the reader is referred to the sections on those diseases.

Symptoms. Begins suddenly, generally at night, with a *chill* or chilliness, *pain* and *stiffness in the joints*, loss of appetite, at times, nausea and vomiting, followed by *fever*, the temperature soon reaching 102°, F., to 104°, in rare cases 108° to 110° (*the hyperpyrexia*), the *pulse* seldom exceeding 95, *great thirst*, *profuse acid sweats*, scanty, *high colored, acid urine*, at times showing traces of albumen, the *bowels constipated*. The *fever* continues throughout the attack, showing marked remissions. Delirium is absent, except the *hyperpyrexia* occur. *Sleep* is prevented by the *pain* and the *profuse perspirations*. The strength is moderately well preserved.

The *skin* is often covered with an eruption of *miliaria rubra*, red

papulae and *miliaria alba*, the result of irritation at the orifices of the perspiratory glands, from the excessive sweating.

The *local* phenomena are *pain*, *tenderness*, *increased heat*, *swelling* and *redness* of one or more joints; if but one joint, it is termed *monoarthritis*, if more than one, *polyarthritis*. *Pain* is aggravated by *motion* and *pressure*. *Swelling* is most apparent in those joints not covered with muscle, to wit: knee, wrist, elbow, ankle, and the hands and feet, and is proportionate to the acuteness of the attack. The inflammation may abruptly cease at one or more joints, and as suddenly attack others.

The disease is extremely irregular as regards the number of joints affected, although the local manifestations are controlled by an important pathological law, to wit: *the law of parallelism*. Corresponding joints are often affected together, and when not, the different affected joints are either on one side of the body, or those on both sides which are analogous, as, the knee, elbow, wrist, ankle, hip and shoulder, are attacked together.

Complications. Pericarditis, endocarditis, myocarditis, cerebral endarteritis, bronchitis, pneumonitis and pleuritis.

Duration. The duration of acute rheumatism is governed entirely by the presence or absence of complications. Uncomplicated cases recover in from *thirteen* to *twenty-one* days, although they may be prolonged to five or six weeks. Relapses are frequent.

Diagnosis. A typical case cannot be mistaken for any other disease, but cases running a *subacute* course may be mistaken for acute rheumatoid arthritis, gonorrhœal rheumatism, or pyæmia.

Acute rheumatoid arthritis attacks one joint at a time and becomes permanent, has slight if any fever, no sweats or cardiac lesions.

Gonorrhœal rheumatism is associated with a gleety discharge, attacks either the ankle or wrist only, is slowly influenced by treatment, and lacks the febrile phenomena.

Pyæmia is usually manifested at a single joint at the time, and is followed by suppuration and all the symptoms of hectic fever.

Prognosis. Recovery is the rule in uncomplicated cases, the mortality being about three per cent. When death occurs it usually depends upon hyperpyrexia, cardiac complication, or cerebral endarteritis.

Treatment. Owing to our imperfect knowledge of the exact nature of this most painful disease, its treatment still remains either

empirical or is directed toward certain prominent symptoms or complications of the disease. Garrod claims that "colored water" is about as potent as anything else, for it is, he says, a "self-limited disease," sometimes running a long and sometimes a short course. Rest in bed, whether the pain forces it or not, is imperative. *Warmth* is as imperative, for which purpose the patient should be kept in *blankets*—no sheets—and wear woolen garments. The *diet* must be easily digested food, milk being the most suitable.

Strong and vigorous patients do well with *acidum salicylicum* or the *salicylates* in large and frequently repeated doses, to wit:—

R.	Acidi salicylici.....	gr. xx
	Liq. ammonii acetat.....	f 3 iss
	Spts. ætheris nitrosi.....	℥xx
	Syr. simplicis.....	℥xv.

Every three hours, well diluted.

Or—

R.	Sodii salicylici.....	gr. xx
	Tinct. lavandulæ comp.....	℥xv
	Glycerini.....	3 ss
	Aquæ.....ad.....	f 3 ss.

Every three hours, well diluted.

If benefit follows, the evidence is quickly afforded in the relief of pain and the decline of the temperature and swelling. If, therefore, after three or four days' use of the salicylates or acidum salicylicum, as above recommended, signs of improvement are wanting, the treatment had better be changed for the *alkaline* treatment, which consists in the administration of *an ounce and a half* of the alkaline carbonates, either alone or with a vegetable acid, each twenty-four hours, until the *urine becomes neutral* or *alkaline*, when the quantity is reduced to an amount sufficient to maintain alkaline urine, to wit:—

R.	Potassii bicarbonatis.....	3 ij
	Acid. tartaric.....	gr. xxx.

Dissolved in a glass of water and drank effervescing, every three hours.

Or—

R.	Potass. bicarb.....	3 ij	
	Succi limonis.....	f 3 iv	
	Aquæ cinnamomi.....ad.....	f 3 ss.	M.

SIG.—In water, every three hours.

After the more *acute* symptoms are passed, change either of the above for *tinct. ferri chlor.*, gtt. xx every four hours, well diluted.

Pale, feeble and anæmic patients, or attacks following scarlatina, are most favorably influenced with

R. Tinct. ferri chlor..... gtt. xx-xxx
 Syr. limonis..... gtt. xx
 Aquæ.....ad..... f℥j. M.

SIG.—Every four hours, in glass of water.

Or—

R. Sodii salicylici..... ℥iv
 Tinct. ferri chlor..... f℥iiss
 Liq. ammonii citrat..... f℥j
 Olei gaultheriæ..... ℥xxxij
 Glycerini..... f℥iiss
 Aquæ.....q. s.....ad..... f℥iv. M.

SIG.—Half tablespoonful every three hours, with water.

Or—

R. Acid. salicylici..... ℥viiij
 Ferri pyrophos..... ℥iv
 Sodii phosphat..... ℥iij
 Aquæ font..... f℥ij. M.

SIG.—Dessertspoonful every three or four hours.

Prof. DaCosta reports a lessened proportion of *cardiac complications* with *ammonii bromidum*, gr. xv-xx, every four hours.

Subacute attacks and lingering cases are favorably influenced by

R. Lithii salicylatis..... gr. xv-xx
 Syr. zingiberis..... f℥j
 Aq. lauro-cerasi..... f℥j. M.

Every four hours.

Whichever plan, acidum salicylicum, salicylates, alkaline or ferrum, is adopted, *quininum*, gr. xij-xx, per day should also be used.

Pain and *restlessness* should be controlled by *opium* in some form, in full doses, or *atropina*, gr. $\frac{1}{80}$, hypodermatically.

For the *hyperpyrexia*, *quinina*, gr. xxx-lx repeated p. r. n., with the *cold bath* or *wet pack*.

Locally, the affected joints should be wrapped in cotton-wool or flannel, saturated with a solution of *tinct. opii*, one part, and *liq. plumb. subacetat. dil.*, two parts, or—

R. Sodii bicarbonatis..... ℥ij
 Tinct. opii..... f℥ss
 Aquæ bul..... Oij. M.

Dr. Bartholow finds the application of *blisters* an effective method.

He says, "I have small blisters, the size of a silver dollar, placed around the joint, leaving an interval between for succeeding applications. It is by no means so painful and disagreeable as it appears at first sight. The blisters remarkably relieve the pain, bring about a more alkaline condition of the blood, and render the urine less acid, or bring it to neutral, or even to alkaline."

The complications are to be treated according to their character.

MUSCULAR RHEUMATISM.

Synonyms. According to location, to wit: cephalodynia; lumbago; torticollis; pleurodynia.

Definition. An affection of the voluntary muscles, inflammatory in character, either *acute* or *chronic*; characterized by pain, tenderness, and stiffness of the affected muscles. It is never complicated with cardiac disease.

Cause. A disease of adult life. One attack predisposes to another, Almost always due to cold and damp, or direct draught of cold air. Gout increases the tendency to attacks.

Pathological Anatomy. The true nature of muscular rheumatism is not yet determined. Virchow suggests a "hyperæmia of, and scanty serous exudation between, the muscular striæ, and in chronic cases inflammatory proliferation of the connective tissue."

Symptoms. The *first* attack is generally *acute*. Onset rather sudden, with *pain* in the affected muscles, with slight *tenderness*, and considerable *stiffness*, and *difficulty of movement*, by which also the pain is increased.

The suffering may be severe and constant, or only on motion. *Spasm* of the affected muscles may occur. *Objective* symptoms are wanting, except it is evident that the patient keeps the affected muscles as quiet as possible. Fever is absent. The pain may prevent sleep.

Duration, *acute* form, about one week. *Chronic* returns frequently, and finally becomes constant and aggravated when the weather is damp.

Varieties. It may affect any or all of the voluntary muscles, but its most frequent and important varieties are:—

1. *Cephalodynia.* Situated in the occipito-frontal muscle. Distinguished from *neuralgia* of the trifacial, or occipital nerve, by pain on

both sides of the head, excited or aggravated by movements of the muscle, and by absence of disseminated points of tenderness.

The muscles of the eye may be affected, and movements of that organ excite pain. If the temporal and masseter muscles are attacked, mastication excites pain.

2. *Torticollis*. Wry neck, or stiff neck, Situated in the sterno-mastoid muscles. Generally limited to one side of the neck, toward which side the head is twisted, great pain being excited on attempting to turn to the opposite side. Rheumatism of the muscles of the back of the neck, *cervicodynia*, may be mistaken for occipital neuralgia.

3. *Pleurodynia*. Situated in the thoracic muscles, and may be mistaken for pleuritis, or intercostal neuralgia, from which it is differentiated by the absence of the diagnostic features of each. Pain is excited by forced breathing, coughing and sneezing.

4. *Lumbodynia* or *lumbago*. Situated in the mass of muscles and fasciæ which occupy the lumbar region. Most common variety. Usually affects both sides. It may set in rapidly and become very severe. Motion of any kind aggravates the pain, often becoming very sharp or stabbing in character. It is sometimes complicated with *acute sciatica*, when the suffering is agonizing.

Diagnosis. The different varieties may be mistaken for any of the following ailments, to wit: trifacial, occipital or intercostal neuralgia, pains of progressive muscular atrophy, syphilis, metallic poisons, or painful affections of the loins, arising from calculi or gravel in the kidney.

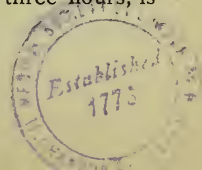
A careful examination of the history is usually sufficient to arrive at a correct diagnosis.

Prognosis. Difficult to eradicate, and in chronic cases to ameliorate; but is not dangerous to life. Death never results.

Treatment. *Rest* is the first indication. This is accomplished in *pleurodynia* by firmly strapping the affected side with broad strips of plaster, extending from mid-spine to mid-sternum.

The *local* application to the affected muscles of *hot* poultices, made of two-thirds *pilocarpus* leaves, and one-third *flaxseed* meal, changing them every two hours, is, in the opinion of the author, the most rapidly successful treatment in acute cases.

Internally, *sodii salicylat.*, gr. xv-xx, every two or three hours, is of use in many cases.



For the *pain*, and consequent sleeplessness, use—

R.	Pulv. ipecac. et opii.....	gr. x	
	Potass. nitras.....	gr. v-x.	M.
SIG.—In powder, morning and night.			

Or, hypodermatically, at the seat of pain, *morphina*, gr. $\frac{1}{8}$ – $\frac{1}{4}$, and *atropina*, gr. $\frac{1}{80}$, p. r. n.

The following liniment is valuable in many cases:—

R.	Quininae sulph.....	gr. xl	
	Ol. gaultheriæ.....	f $\frac{2}{3}$ j	
	Lin. saponis co.....	f $\frac{2}{3}$ iij.	M.
SIG.—Thoroughly applied several times a day.			

Chronic cases: Rest, flannel worn next to the skin, stimulating and anodyne liniment, mild galvanism, dry heat, as ironing over the affected part with a common flat-iron, a piece of paper, or towel, being placed next to the skin.

Internally, *potassii iodidum*, *ammonii murias*, *sulphur*, *guaiacum* or *arsenicum*, variously combined.

RHEUMATOID ARTHRITIS.

Synonyms. Arthritis deformans; rheumatic gout.

Definition. An inflammation of the joints, accompanied with but slight fever, without suppuration, progressive in character, causing nearly symmetrical enlargement and deformity of various articulations.

Causes. More common in females than in males, and in the weak and anæmic. Among the causes are bad hygiene, exposure, prolonged lactation, frequent pregnancies, menopause, grief, tubercular diathesis, and following attacks of articular rheumatism.

Pathological Anatomy. It is not rheumatism, as the blood contains no *lactic acid*. It is not gout, as *uric acid* is not found in the blood nor *urate of sodium* in the joints.

At first rheumatoid arthritis is attended with hyperæmia of the affected synovial membrane and increase of the synovial fluid. Soon the capsular ligament becomes irregularly thickened, the synovial fluid decreasing. If the process continue, the internal ligament is destroyed, thus allowing dislocations to occur. The inter-articular fibro-cartilages ulcerate and disappear, as does the cartilages covering

the ends of the bones, the ends of the bones becoming smooth and eburnated, and often greatly enlarged.

Symptoms. Either *acute* or *chronic*, the latter most common.

Acute form involves several joints at the same time, and is attended with slight pyrexia.

Chronic form slowly involves one joint, which seemingly soon recovers, and is attacked again, and may never recover, but grows progressively worse.

The *joint* slowly *enlarges*, is *painful*, movement exciting *neuralgic pains* along the limb. Soon the articulation becomes *rigid* or slightly movable after prolonged attempts. Redness and tenderness are wanting. *Crepitation* is distinct after ulceration has destroyed the cartilages.

The hands are first involved, the disease spreading symmetrically from articulation to articulation, until in severe cases every joint is deformed.

Diagnosis. *Chronic articular rheumatism* is often confounded with rheumatoid arthritis; but the former lacks the marked structural changes and the progressive involvement of joint after joint.

Gout differs from rheumatoid arthritis by the presence of deposits of urate of sodium in the joints, the ears, tips of fingers and the bursæ over the olecranon process of the elbow, the presence of uric acid in the blood, and the decided history of acute paroxysms.

Gonorrhæal rheumatism, so-called, has symptoms akin to rheumatoid arthritis, but the history of urethral suppuration clears up the diagnosis.

Paralysis agitans, when pronounced, might be confounded with rheumatoid arthritis, if the examination were limited to the joints, but the whole history, such as the tremor, the gait, etc., should prevent error.

Prognosis. If early treatment be instituted, the disease may be held in abeyance for several years. After pronounced structural changes have begun, the malady is incurable, although it may remain stationary for a long time.

Treatment. If treatment be instituted before serious structural lesions have occurred, the author has seen benefit in many cases by the following treatment: *Oleum morrhuæ* carefully and thoroughly rubbed into the affected joints, three times a day, with the internal use of *lithii citras effervescentes* ʒj, three times a day, and the following tonic mixture:—

R.	Massæ ferri carbonat.....	gr. v	
	Liquor. potass. arsenit.....	℥v	
	Vini xerici.....	3j	
	Aquæ.....	3j.	M.

After meals, well diluted.

Sodii salicylicum is recommended early in the disease.

Complete recoveries are reported from the long-continued administration in small doses of *liquor potassii arsenitis*.

Attention to diet and hygiene are also necessary. When structural changes have destroyed portions of the joint, palliative treatment is the only indication.

GOUT.

Synonyms. Podagra, gout in the foot; chiragra, the hand; gonagra, the knee.

Definition. A constitutional disease, usually inherited; characterized by the sudden occurrence of a paroxysm of severe pain and swelling in one of the smaller joints—the great toe usually—with the presence of uric acid in the blood, and the deposit of the urate of sodium in the structure of the joint.

Causes. *Predisposing*; inherited; male more than female—women after menopause.

Exciting. Malt liquor and wine drinking, whether male or female; large consumption of animal food; lead poisoning; winter season.

When inherited tendency, may begin early in life; when acquired tendency, after thirty-five years.

The pathological cause consists in the presence of an excess of *uric acid* in the blood, in the form of *urate of sodium*.

Pathological Anatomy. Gout is characterized by the deposit of *urate of sodium* from the blood into the structure of joints and tissues that are not very vascular. The deposit is associated with signs of inflammation, to wit: hyperæmia, redness of the surface, with swelling and effusion in and around the affected joint. The surfaces of the joint are incrustated with chalk-like masses, consisting of urates, which become greater with each attack, finally causing great deformity.

The deposit usually begins in the metatarso-phalangeal joint of the great toe, but other and many joints are soon affected.

The deposits may also be found in the knuckles, eyelids, and cartilages of the ear.

"Crystals of urate of soda are deposited in the tubules and intra-tubular tissues" of the kidneys—"gouty kidney"—and may be seen by the naked eye, the kidneys becoming small, granular and fibrous.

Hypertrophy of the left ventricle and of the arteries, ending in atheromatous changes, are results of gout.

Symptoms. *Acute Gout.* Occurs in paroxysms; one year's interval between the first and second attack; six months usually between the second and third, after which may occur at any time.

Prodromes usually precede the paroxysm for several days, to wit: acid dyspepsia, constipation, headache and lassitude.

The *paroxysm* begins suddenly, between midnight and 2 A. M., with acute *pain* in the ball of the great toe, which becomes *red, hot, swollen*, and *so sensitive* that the slightest touch cannot be borne.

The veins are filled, the foot, ankle and leg swollen, and the limb the seat of sudden spasmodic contractions, which increase the suffering. Slight relief is afforded by elevating the limb. Associated with the local symptoms are, *chill, fever*, quickened *pulse, thirst, coated tongue, constipation*, and *scanty, acid*, high-colored *urine*, which deposits, on cooling, a heavy *brick-dust* sediment.

Towards daylight the symptoms ameliorate, to return again at sundown, the severity gradually lessening, until the fourth or fifth day, when convalescence is established, the patient, as a rule, feeling better than before the attack.

Chronic Gout. Either the result of acute attacks or with a greater number of joints being attacked.

The *paroxysms* occur at any time, but develop slowly, with less pronounced local and general symptoms. Deposits are noticed, the joints becoming hard, knobby, and often distorted. The deposits or *chalk-stones* (urate of sodium) occur about the joints, tendons and bursæ, and helix of the ear.

Diagnosis. An error cannot occur if the history of the case can be obtained, to wit: hereditary tendency, age, sex (females rare, until menopause), mode of living, character of symptoms and presence of the characteristic deposits.

Prognosis. Acute gout rarely fatal; is prone to return, but much depending upon the mode of living.

Chronic gout decidedly shortens life. The most serious signs are those indicating advanced renal disease, with non-elimination of uric

acid. Gout influences unfavorably the prognosis from acute diseases or injuries.

Treatment. For the *acute paroxysms* at once, *vinum colchici radidis*, gtt. xv–xx–xxx, every two hours, *well diluted*, either alone or in combination with a *potassa* salt, or *sodii salicylas*, gr. xx, every three or four hours, well diluted, or Prof. Bartholow's pill,

R. Colchicinae.....	gr. $\frac{1}{10}$
Ext. colocynth. comp.....	gr. ss
Quininæ sulph.....	gr. iij.

Every two or three hours.

Or the following, recommended by Loomis:—

R. Pulv. ipecac.....	gr. j	
Ext. colchici acet.....	gr. j	
Hydrargyri chlor. mite.....	gr. j	
Ext. aloes aq.....	gr. j	
Ext. nucis vomicæ.....	gr. $\frac{1}{4}$.	M.

Ft. pil. No. 1.

SIG.—Every three hours.

For the *pain*, hypodermatic injection of *morphina*, and wrapping the inflamed joint in cotton wool saturated with *liq. plumb. sub-acetat. dil.* and *tinctura opii*.

The diet must be restricted to liquid food.

For *chronic gout*, regulated diet, free action on the secretions, and *lithii citras effervescentes*, ℥j, three or four times a day, well diluted with water; and perhaps a course of *quinina*, *ferrum* and *arsenicum*.

To prevent paroxysm, keep secretions acting, by the free use of pure water or a good alkaline water, especially the Saratoga Vichy.

The diet is of the greatest importance, and should consist chiefly of vegetables and fruit, excepting tomatoes and strawberries; fresh meat may be used once a day, as may oysters, fish and soups. Alcoholic and malt liquors are contraindicated, as are tea and coffee; skimmed milk should replace all the above. No eggs or dishes containing eggs, no pastry, hot bread or cakes, no sweetmeats, spices or condiments.

Systematic exercise, especially walking, is of great advantage.

Cold bathing, with caution, while the vapor or Turkish bath are of benefit.

Changing from a cold to a warm climate in winter, and the use of flannel under-clothing, are strongly recommended.

LITHÆMIA.

Synonyms. Lithiasis; uric acid diathesis; half gout.

Definition. A condition in which the fluids of the body are saturated with nitrogenized waste, in the form of *lithic* or *uric acid*; characterized by marked dyspepsia, various nervous phenomena, muscular and articular pains, bronchial catarrh, all or any of these associated with scanty, high-colored, acid urine.

Causes. High living, with little exercise; imperfect digestion of nitrogenized food; impaired elimination of uric acid.

Symptoms. Those of *dyspepsia* associated with *irregular bowels*, scanty, high-colored, *acid urine*, sp. gr. 1.024–1.028, containing neither sugar nor albumen, but showing an *increased* proportion of *urates*. Also, *depressed spirits*, *impaired memory*, *loss of interest in occupation*, *sleepless nights*, attacks of *vertigo*, neuralgic *pains* in the head, and a constant dread of apoplexy or cerebral disease. Also, *pains in the joints*, neuralgic in character.

If the condition be allowed to continue, the following organic changes may result, to wit: fatty heart; fibroid kidney; enlarged liver, or changes in the cerebral vessels.

Diagnosis. From gout, by the absence of acute paroxysms and resulting changes in the joints.

Prognosis. If properly recognized and treated, complete recovery will result, although it is a disorder of long duration.

If not properly treated, develops some one of the organic diseases mentioned.

Treatment. Regulate diet, using fresh meat once daily, poultry, game (plainly cooked), fresh fish, oysters, occasionally eggs, lettuce, spinach, celery, cold slaw and tomatoes; avoid all stimulants, tea and coffee, using milk, skimmed milk or milk and cream. Act freely on all the secretions. Systematic exercise. Avoid tonics, bromides, chloral and opium. Long course of alkaline waters. Good results follow *lithii citras*, gr. xx, t. d., *sodii phosph.*, gr. xxx, ter die, or *acidum benzoicum*, gr. x, t. d., all well diluted with water. The author strongly urges the use of *acidum nitricum dilutum*, gtt. x, in half a glass of water, four times a day, with the occasional use of *pilulæ rhei composite* at bedtime.

DIABETES MELLITUS.

Synonyms. Glycosuria ; melituria.

Definition. A chronic affection characterized by the constant presence of grape sugar in the urine, an excessive urinary discharge, and the progressive loss of flesh and strength.

Causes. Most common in males. Occurs at all ages, but most frequently between twenty-five and fifty years. It is often hereditary. Disorders of the nervous, hepatic and renal systems. Excessive use of farinaceous food and malt liquors. Sexual excesses.

The exact *pathology* of diabetes mellitus differs in different cases, and in the present state of our knowledge no exclusive view can be adopted. Still, there are reasons for believing that, in a large proportion of cases the nervous system is primarily at fault, though the character of the lesions may differ.

Pathological Anatomy. None peculiar to diabetes are yet recognized.

Hyperæmia and hypertrophy of the liver and kidneys are generally present, the result of increased functional activity.

The changes in the lungs peculiar to phthisis are often found in very chronic cases.

The changes in the nervous system are not fully determined.

Symptoms. Clinically cases differ greatly in their course and severity ; one class presenting slight symptoms and a chronic course ; another class having marked local and constitutional symptoms and an acute course. The symptoms of a typical case may be arranged under the following heads :—

Urinary Organs and Urine. Micturition more frequent and the *urine increased* in quantity. *Pain* over the region of the kidneys. The *quantity of urine* may amount to 4, 8, 12, 20 or 30 pints in twenty-four hours. It is usually *pale, clear* and *watery*, having a *sweetish taste* and *odor*, the *specific gravity* ranging from 1.025 to 1.050. It ferments rapidly if kept in a warm place. It yields *grape sugar* to the usual tests, the amount present varying from *an ounce to two pounds* in the twenty-four hours.

The urea and uric acid are increased. Albumen may be present.

The increased passage of a large quantity of saccharine urine causes a constant itching, burning and uneasy sensation at the prepuce, along the urethra, and at the neck of the bladder ; in females, itching

and eczema of the vulva are common ; in children, incontinence of urine is frequent.

Digestive Organs. An almost constant symptom is *thirst*, with a dry and parched condition of the mouth. At times the *appetite* is *excessive*, again absent. The breath may have a sweetish odor, the *tongue* irritable, red and often cracked. *Dyspeptic symptoms* are common, and occasionally vomiting. The *bowels* are constipated, the stools pale and dry. At times diarrhœa may occur.

The patient complains of feeling *very weak*, languid, and of *soreness and pain in the limbs*, there is more or less *emaciation*, a harsh, dry *skin*, the *countenance distressed and worn*.

The mind is often greatly altered ; depression of spirits, decline in firmness of character and moral tone, with irritability, are present. Sexual inclination and power are diminished. Defects of vision are present.

The blood and various secretions contain sugar.

Complications. Pulmonary phthisis ; Bright's disease ; defects of vision from atrophy of the retina or the formation of a soft cataract ; boils and carbuncles, and chronic skin affections, such as psoriasis and eczema.

Course. The clinical history varies in different cases. In the majority of instances the course is chronic, lasting for years, the symptoms beginning insidiously, and becoming progressively worse, with, at times, decided remissions. Occasionally the disease runs an acute course, death occurring within four or five weeks.

Termination. The majority of cases ultimately prove fatal, the symptoms markedly changing, the *urine* and *sugar diminishing* in quantity, the occurrence of *albuminuria*, *disgust for food and drink*, and the development of hectic fever or colliquative diarrhœa.

The fatal result usually arises from *gradual exhaustion*, from blood poisoning, leading to *stupor, ending in complete coma*, or occasionally to *delirium* or *convulsions*, or from complications.

Rarely, death occurs suddenly, from *uræmic convulsions* or *uræmic coma*.

Diagnosis. Diabetes mellitus only exists when *grape sugar* is permanently present in the urine. "It is not the quantity, but the persistence of sugar which constitutes diabetes."

When are present grape sugar in the urine, with more or less increase in the urinary flow, it can be mistaken for no other affection.

From *Bright's diseases*, by the absence of dropsy, and of tube casts in the urine; the amount of albumen in the urine is never so great or constant in diabetes mellitus as in Bright's diseases.

From *Diabetes Insipidus*, by the absence of sugar in the blood and urine, and the larger quantity of urine voided in polyuria.

Simple glycosuria differs from diabetic glycosuria in that the amount of sugar in the urine is not constant—at one time being present, at another absent—the amount of urine voided is never in excess of health; simple glycosuria is a disease of the aged; diabetic glycosuria usually appears under fifty years. Simple glycosuria often results from the inhalation of chloroform, the use of chloral, in the insane, from excitement, or the result of injuries to the head.

Prognosis. Most unfavorable as regards a cure, it being fairly questionable if complete recovery has ever occurred in a typical case. Still, decided amelioration may take place in the symptoms, and the progress of the malady be greatly retarded. The younger the patient, the more rapid the fatal termination.

Treatment. Impress upon patients the importance of a strictly *regulated diet*. Prohibit or restrict the consumption of such articles as contain *sugar* or *starch*, especially ordinary bread or flour, sugar, honey, potatoes, peas, beans, rice, arrowroot, etc.

The main diet should be of *animal food*, including meat, poultry, game and fish.

A moderate amount of fluids should be allowed, and in a majority of cases *milk* will prove beneficial, although, theoretically, contra-indicated. Tea, coffee and cocoa, without sugar, may be allowed in moderation, glycerin being used as a substitute for the sugar.

Regulated exercise is of importance. The patient should wear flannel, and have two or three warm baths every week, or an occasional Turkish bath.

Therapeutical Treatment. *Opium* exercises an influence over the excretion of sugar, but the effect is not maintained. Pavy strongly urges the use of *codeia* in doses of gr. $\frac{1}{2}$ –iij, three times a day. Prof. DaCosta suggests the use of *ergota*, which has decreased the urinary discharge and the quantity of sugar in a number of cases. Prof. Bartholow has met with an apparent cure by *ammonii carbonas*. The author has met with decided partial success with *urarii nitras*, gr. j–iij, three times a day, the cases not yet being under observation a sufficient length of time to pronounce them cured, although in two

the urine has been diminished from three quarts per day to normal, the quantity of sugar from nine ounces to less than half an ounce, in the twenty-four hours.

Potassii bromidum, ℥j during the twenty-four hours, is strongly urged. The following remedies are recommended by different observers, to wit: *pepsinum*, *liquor potassii arsenitis*, *iodum*, *potassii iodid.*, *sodium salicylas*, *acidum lacticum*, *glycerinum*, *quinina*, *tinctura cannabis indica*, etc. The evidence in favor of the majority of these drugs is far from satisfactory.

Symptomatic treatment is mostly called for. For emaciation and anæmia, *ferrum* and *oleum morrhuæ*: for sleeplessness and restlessness, *morphina*, *potassii bromidum*, *chloral* or *hyoscyamia*. Duchenne suggests the following solution for the *excessive thirst* of diabetic patients:—

R. Potassii phosphat..... two parts
Aque..... seventy-five parts. M.

SIG.—One teaspoonful twice or thrice daily, in wine or hop tea.

The dyspepsia and lung symptoms must be managed on general principles.

DIABETES INSIPIDUS.

Synonyms. Polyuria; polydipsia.

Definition. An affection characterized by the habitual discharge of a very large quantity of pale, watery urine, free from albumen and sugar.

Causes. Occasionally hereditary, or diabetes mellitus may have existed in the parent; more common in children or young adults; men are more liable than women; injuries and diseases of the nervous system; exposure to cold; drinking freely of cold water; fatigue; prolonged debility; malaria; syphilis.

The probable immediate cause of the excessive flow of urine consists in dilatation of the renal vessels, the result of paralysis of their muscular coat, caused by derangement of innervation, as the condition can be induced experimentally by irritating a spot in the fourth ventricle, or by section of portions of the sympathetic nerve.

Symptoms. The affection is characterized by *great thirst*, with an increased flow of pale, watery, slightly acid urine, the amount varying from *one to five or six gallons* in the twenty-four hours. The *specific gravity* ranges from 1.001–1.007. *Sugar and albumen are absent.*

Urea and the other solids are increased. The *appetite* is voracious, the *bowels* are obstinately constipated, and the *skin* is dry and harsh.

The large flow of urine is usually preceded by various nervous phenomena, as *nervousness*, *irritability*, *inability to concentrate the mind*, *vivid imagination*, *failure of memory*, and *headache*.

Unless the affection is soon arrested great loss of flesh and strength result.

Diagnosis. It differs from *diabetes mellitus* by the absence of grape sugar in the urine.

From *paroxysmal diuresis*, by the absence of the increased urine permanently.

From *interstitial nephritis*, by the greater amount of urinary discharge and the absence of albumen, œdema, etc.

Prognosis. Rather unfavorable as to a radical cure, unless caused by syphilis. Death rarely is due to the diabetes, but to some intercurrent malady that the patient has been unable to withstand, on account of the weakness produced by the diabetes.

Treatment. If due to syphilis, *potassii iodidum* and *hydrargyrum* are of real benefit. Prof. DaCosta has had success with *ergota* in the form of the fluid extract or the aqueous extract. *Pilocarpus* has been used with success. Prof. Bartholow recommends *galvanism* in cases not cured by *potassii iodidum*, placing "one electrode to the neck below the occiput, the other to the hypochondriac regions in turn." *Valerian* and *potassii bromidum* have been used. The author has effected a cure in three cases, where other remedies had failed, by the use, internally, of—

R.	Strychninæ sulph.....	gr. $\frac{1}{40}$	
	Acid. hydrochlor. dil.....	℥ ^x	
	Aquæ lauro-cerasi.....	ʒ ij.	M.
	Well diluted.		

The obstinate constipation is best overcome by *pilulæ catharticæ compositæ*, one at bedtime.

CHOLERA.

Synonyms. Epidemic cholera; Asiatic cholera; malignant cholera; spasmodic cholera.

Definition. An acute, specific, infectious disease, epidemic in the majority of, although endemic in other, localities; characterized by the transudation of serum into the stomach and intestinal canal

and violent purging of a peculiar, rice-water-like fluid, the persistent vomiting of a similar material, severe muscular cramps, and a condition of prostration, followed by collapse and death, or of a reaction from the collapse and the development of the typhoid state (*cholera typhoid*).

Causes. A *specific poison*, probably the "comma bacillus" of Koch. Cholera is but feebly *contagious*, in the usual acceptation of that word, but it is unquestionably *infectious*.

The evidence seems conclusive that the *cholera stools* are the main, if not the only, channel of infection, and that the great cause of the propagation of cholera is the contamination of the water used for drinking purposes with the stools. Milk may also be the vehicle by which it spreads. Little, if any, danger exists from being in the presence of the affected, although the emanations from the cholera excreta in the atmosphere may generate the disease if swallowed or inhaled. The dead bodies of cholera subjects apparently possess slight infective property, "the bacteria of decomposition" probably destroying the cholera germs. One attack does not afford protection against another.

The *period of incubation* is short, under a week, usually.

Pathological Anatomy. This is, as yet, far from satisfactory. The morbid appearances in the majority of cases of death from cholera may be thus summarized: The temperature generally rises after death, the body remaining warm for a considerable time. Rigor mortis rapidly ensues, the muscular contractions being often so powerful as to displace and distort the limbs. The skin is mottled and the body greatly shrunken. The blood is darker in color, thick, viscid, feebly coagulable, and slightly acid. The arteries are quite empty of blood, the veins, on the other hand, are distended. The organs are, as a rule, pale and shrunken.

The stomach and intestinal mucous membranes are congested, and present evidence of extravasations and ecchymoses, or are bleached and pale. The stomach and intestines usually contain a quantity of whey-like material, having an alkaline reaction, as well as quantities of cast-off epithelium and the peculiar bacillus. It is thought by many that the stripping-off of the epithelium is a post-mortem phenomena. The Peyer's, solitary and Brunner's glands are usually enlarged and prominent, and occasionally evidences of ulceration are apparent in the solitary glands, and sections placed under the microscope show the "comma bacillus." The villi of the mucous

membrane, as well as the epithelium of the small intestines, are stripped off, leaving the basement membrane, for the most part, exposed. The *liver* is more or less advanced in fatty degeneration, presenting a somewhat mottled, yellowish discoloration. The *kidneys* are congested, the epithelium of the tubules granular and detached from the basement membrane, blocking up the tubes. Prof. Bartholow observed, in all of his autopsies, "considerable hyperæmia and dilatation of the vessels of the medulla oblongata. The constancy of this lesion would seem to indicate a relationship between congestion of the medulla and the cramps."

Symptoms. In accordance with the law of epidemic infectious diseases, the onset, course and character of the symptoms vary in different cases and at different periods in the same epidemic.

The disease may either set in suddenly in a patient previously in good health, or it may follow an attack of rather severe and persistent diarrhœa, with *pain, nausea, vomiting and depression*. Such are cases termed *Cholerine*, the stools of which are infectious.

In a typical case there are three stages: *first*, diarrhœa; *second*, prostration; *third*, collapse, or, in favorable cases, reaction.

First Stage. Begins with *chilliness*, excessive *thirst*, coated tongue, unpleasant taste in the mouth, slight abdominal *pain*, and three or four copious, *watery*, yet fecal *stools* during the day, and a decided feeling of *weakness*, the stools rapidly becoming *whely-like*, easily voided, but with force, and only slight pain.

Second Stage. The *stools* rapidly increase in number, are voided with a rushing force, and consisting of many quarts of grayish, or whitish, *rice-water-like* fluid, accompanied with forcible *vomiting*, first of the contents of the stomach, mixed with more or less bilious matter, afterwards of the peculiar rice-water-like material; *thirst* becomes most intense, increasing or diminishing with the variations in the number of the vomit and stools; severe *muscular cramps* soon follow, most severe in the calves, although occurring in all parts of the body.

Third Stage. The stools, vomit and cramps continue. The appearance of the patient becomes frightful; the eyes are sunken and surrounded by blackish rings, the nose pinched and pointed, the cheeks hollow, and the lips blue (facies cholericæ); the surface cold and moistened with a sticky perspiration: the skin of the hands and fingers have the sodden appearance of the "washerwoman who has washed all day," and if picked up in folds, the fold but slowly dis-

appears. The *temperature* rapidly falls, the *pulse* becomes small and compressible, barely perceptible at the wrist, and the heart beats are scarcely recognizable. The *voice* is weak, husky and sepulchral (vox cholericæ), the tongue is like ice, the *breath is cold and icy*, the *urine* markedly diminished and albuminous. The *mind* is not cloudy, but most patients are apathetic and indifferent to their danger. This, the *algid* stage of cholera, or *cholera asphyxia*, usually terminates in death from three to twelve, twenty-four or forty-eight hours, but *reaction* may be established.

Stage of Reaction. The temperature of the body rises, the pulse gradually becomes fuller and stronger, the countenance becomes brighter, the stools less frequent and more fecal, the vomiting decreases, the thirst lessens, the urine increases in amount, but continues albuminous, the patient entering a slow convalescence, or *typhoid symptoms* develop, the so-called *cholera typhoid*, which prolongs the recovery for several weeks.

Convalescence is often prolonged and complicated by the development of severe bed sores, boils, bronchitis, pneumonia or parotitis.

Sequelæ. Suppuration of the parotid gland; painful tetanic contraction of the flexor muscles of the limbs; abscesses or ulcers of the limbs; profuse sweats; roseola, erythema, urticaria, and rarely vesicular eruptions.

Diagnosis. The epidemic character, and rapid spreading, and great mortality of the affection prevents its being mistaken for any other disease, although isolated cases are often confounded with cholérine or with cholera morbus, the points of distinction being few, unless the "comma bacillus" only be found in the stools of true cholera.

Prognosis. Very unfavorable, the mortality ranging from twenty to eighty per cent. The last epidemic in this country was much milder than former ones. The prognosis is controlled by the general condition of the patient, the age, habits and the development of the algid stage; the prognosis being more favorable in those cases which develop gradually than in those in which it reaches its acme at a single bound; the very young or very old, those addicted to the various excesses and surrounded by unfavorable hygienic conditions, are more apt to perish than are others.

Treatment. The success depends, to a great extent, upon its prompt and early treatment, for experience amply attests that the

arrest of the disease in the diarrhœal stage is comparatively easy, and that in the stage of collapse its cure by any means whatever is altogether an exceptional occurrence; therefore, during the prevalence of cholera the mildest cases of diarrhœa ought to receive prompt treatment, for many cases have their beginning as a mild diarrhœa.

It must not be overlooked that intelligent nursing and regimen are equally as important as medical treatment.

First Stage. The remedy of all others is *opium* in some form, to which may be added, with benefit, *plumbi acetat*, in doses of gr. iij-v, repeated p. r. n., or *acidum sulphuricum dilutum* combined with *tinctura opii deodorata*, and at the same time applying *mustard* over the abdomen. Water and food should be used with great caution, but *ice* is indicated in unlimited amounts, and at times *iced dry champagne*. The patient must be kept quiet, in bed.

Second Stage. The *opium* treatment should be continued, together with the free use of *stimulants*. For the distressing vomiting, *ice*, *iced champagne*, *acidum carbolicum* or *acidum hydrocyanicum* may sometimes give relief.

Locally either continue the *mustard* application to the abdomen or the constant use of rubber bags filled with boiling water, or cold cloths.

For the *cramps*, hot water in bottles, hot irons or bricks applied over painful parts, or an ointment of chloroform or chloral, chloroform or ether inhalations, or the use of the following hypodermatic solution, strongly recommended by Prof. Bartholow:—

R.	Chloral.....	ʒ iij	
	Morphinæ sulph.....	gr. iv	
	Aq. lauro-cerasi.....	f ʒj.	M.
SIG.—Fifteen to thirty minims each injection.			

For the collapse, heat to the surface and the free use of *stimulants*, or *spiritus frumenti*, or *spiritus vini gallici* hypodermatically, also the hot, and, in some cases, the cold bath has been of advantage; the intravenous injection of saline fluids was unusually successful during the 1884 epidemic in France, and as the *modus operandi* becomes more perfect, its success will be the more marked.

If *reaction* occur, treat indications as they arise, and use tonics, such as *ferrum*, *quinina*, and *arsenicum*.

All the discharges from the patient should be thoroughly *disinfected* as soon as voided, and the stools and vomited material buried.

TRICHINOSIS.

Synonyms. Trichinæ; Trichina spiralis; "flesh-worm disease."

Definition. A typhoid condition, the result of the entrance of a parasite—the *Trichina spiralis*—into the intestinal canal, and their subsequent migration into the muscular structure: characterized by severe gastro-intestinal irritation, severe muscular soreness, and a low typhoid condition.

Cause. The *Trichina spiralis* are introduced into the human body by eating the infected hog's flesh, either raw or but imperfectly cooked.

Description. The *parasite* is found in two forms, to wit: *intestinal trichina*, which is sexually mature, and *muscle trichina*, which is sexually immature.

The *intestinal trichina* is a small, hair-like worm, the male measuring $\frac{1}{8}$ of an inch, and the female $\frac{1}{8}$ of an inch in length; the head is smaller than the rest of the body; the tail of the male has a bi-lobed prominence, between the divisions of which the anal opening is placed, and from which a single spiculum can be protruded; the female has a blunt, rounded tail, the reproductive outlet being situated toward the anterior part of the body; the ova are very small, containing embryos being produced viviparously at the rate of at least one hundred each week after the entrance of the female into the intestinal canal.

The *muscle trichina* develops its sexual apparatus after it has entered the intestinal canal of its host.

The viable embryos discharged from the female are in a state of motion, and at once migrate from the intestines to the muscular structure of the individual, and here set up inflammatory action, they becoming surrounded by a capsule or shell in which they are coiled.

After a time, in the muscle, the *trichina* undergoes a further change; lime salts being deposited in and about the capsule and in the parasite itself, when minute specks of lime are seen distributed throughout the muscular structure.

The development of the parasite from the period of impregnation up to the time of sexual maturity is, under favorable conditions, less than three weeks. Within two days from the ingestion of the infected pork occurs the maturation of the muscle larvæ; in six days more the birth of embryos occur, and in about two weeks the migrating progeny have arrived at their *habitat*, the muscular structure.

Symptoms. These depend upon the number of parasites in the infected food. According to Dr. Sutton, of Indiana, a piece of pork the size of a cubic inch contained eighty thousand trichinæ. There are *three stages* described, to wit: the *intestinal*, the *migration*, and the *encapsulation*.

Intestinal stage, a gastro-intestinal inflammation, with *nausea*, *vomiting*, and a *watery diarrhœa*, the severity depending upon the number of the parasites ingested.

Migration stage, a *typhoid-like fever*, *rapid*, *feeble pulse*, profuse *sweats*, intense *thirst*, dry tongue and lips, and *red*, *swollen face*, with *soreness* and *tenderness* of the *muscular structure*, increased by any muscular act. As a rule the mind is clear but decidedly *apathetic*.

Encapsulation Stage. If the number of parasites ingested have been few, recovery may occur in this stage, but if the number have been large, the gastro-enteritis, fever and muscular phenomena severe, the patient is in a critical condition, between twenty and fifty per cent. succumbing.

Diagnosis. Unless the physician has some intimation of the cause, cases are readily mistaken for either ordinary ileo-colitis or typhoid fever.

Prognosis. Depends upon the number of trichina in the pork eaten. Mortality between twenty and fifty per cent.

Treatment. If the parasites have been recently taken, within the first four or five days, *emetics* and *purgatives* to remove them from the stomach and intestinal canal are indicated. After thorough action of these, attempts may be made to destroy such of the parasites as have escaped the emetic or purgative. For this purpose much is said in favor of *glycerini*, one part, *aquæ*, two parts; or a trial can be made of *acidum carbolicum* and *tinct. iodi*, as suggested by Prof. Bartholow. *Quinina* gave the best results in the cases seen by Dr. Sutton.

After *migration* has begun the powers of life must be sustained by nourishing food, stimulants and tonics.

COMPEND

OF THE

PRACTICE OF MEDICINE.

PART II.

DISEASES OF THE RESPIRATORY SYSTEM.

PHYSICAL DIAGNOSIS.

Physical Diagnosis is the art of discriminating disease by means of the eye, the ear and the touch.

The *signs* thus ascertained are connected with changes or alterations in the form, density, or condition, of the structures within, and are known as *physical signs*.

"Physical signs are, then, the exponents of physical conditions, and of nothing more."

The methods employed in the physical exploration of the chest, are:—I, **Inspection**; II, **Palpation**; III, **Mensuration**; IV, **Percussion**; V, **Auscultation**; VI, **Succussion**.

Percussion and *auscultation*, dealing with sounds, are of the most importance.

For the purposes of physical exploration, the chest is mapped off into regions or divisions, as follows:—

ANTERIORLY.

First:—*Supra-clavicular*, Lying above the upper edge of the clavicle, usually about an inch in extent.

Second :—*Clavicular*, Corresponding to the inner two-thirds of the clavicle.

Third :—*Infra-clavicular*, From the clavicle to the lower border of the third rib.

Fourth :—*Mammary*, Between the third and sixth ribs.

Fifth :—*Infra-mammary*, Downward from the sixth rib.

LATERALLY.

First :—*Axillary*, That portion above the sixth rib.

Second :—*Infra-axillary*, That portion below the sixth rib.

POSTERIORLY.

First :—*Supra-scapular*, That portion above the scapula.

Second :—*Scapular*, That portion covered by the scapula.

Third :—*Inter-scapular*, That portion between the scapulæ.

Fourth :—*Infra-scapular*, That portion below the angle of the scapula.

INSPECTION.

Inspection signifies "the act of looking." Views of the chest should be taken from the sides and behind as well as from the front ; for which purpose a good light should be obtained, and the patient be placed in as easy and comfortable a position as is possible.

Inspection reveals the *form, size, color, and movements* of the chest, as well as the condition of the superficial parts.

In *health* the sides of the chest are for the most part *symmetrical* in form, size, color and movements, both sides rising equally during the act of inspiration, and falling equally during the act of expiration. During the act of inspiration the intercostal spaces in the lower two-thirds of the chest become more hollow, as also do the supra-clavicular fossæ.

Inspiration is almost entirely the result of muscular action ; *expiration*, on the other hand, is chiefly due to the elasticity of the lungs and chest walls, aided somewhat in forced respiration by muscular action. The movement of inspiration by inspection, is of longer duration than that of expiration, and the pause between the acts but momentary.

The *respiratory movement* is visible over the whole thorax, although in males and in children it is most distinct at the lower portion (*inferior costal breathing*), while in the female it is most distinct at the upper portion of the chest (*superior costal breathing*).

PALPATION.

By **palpation** is meant the application of the palmar surfaces of the hands and fingers to the chest, by which means we appreciate impressions which are capable of being conveyed by the sense of touch.

The objects of palpation are :—

First :—To give more accurate information regarding what is revealed by inspection.

Second :—To locate spots of soreness, the density and condition of tumors, if any be present, the state of the chest walls, the frequency of the breathing, and the action of the heart.

Third :—To determine the existence and character of the various kinds of *fremitus* (vibrations).

By **fremitus** is understood certain tactile impressions or vibrations conveyed to the surface of the chest, which are classed and produced as follows :—

First :—*Vocal fremitus*, produced by the act of speaking or crying.

Second :—*Tussive fremitus*, produced by the act of coughing ; of value especially when the voice is very weak.

Third :—*Bronchial fremitus*, produced by the passage of air through mucus, blood, or pus, in the bronchial tubes, during the act of respiration.

Fourth :—*Friction fremitus*, produced by the rubbing together of the roughened surfaces of the pleuræ.

When the normal chest vibrates lightly, it is termed the *normal vocal fremitus*.

The *vocal fremitus* is more distinct upon the right side toward the apex.

If the lung be consolidated (denser), the vibration is greater and more easily distinguished,—*the vocal fremitus is increased*.

In feeble persons, or when any cause interferes with the transmission of the vibrations, the *vocal fremitus is diminished* or absent.

MENSURATION.

Mensuration, or measurement of the chest, is of little practical importance, and hence seldom performed. The only measurement likely to be required is the *circular* or *circumferential*, in different parts of the chest, which is performed with either an ordinary graduated tape measure or a double tape measure, made by uniting two

tapes in such a manner that they start in opposite directions from the same point at the *mid-spinal line*. The tapes drawn around each side until they meet at the *mid-sternal line*, on a line immediately above the nipple, or on the level of the sixth rib near its attachment to the cartilage—the sixth costo-sternal joint—the patient first being directed to effect a complete expiration, the number of inches noted, and then to take a deep inspiration, the increase in inches noted, the difference between the two giving a rough estimate of the capacity of the lungs.

In right-handed persons the right side is usually one-half to three-fourths of an inch larger than the left; if larger than this it is usually the result of some abnormal condition.

In well-developed men the chest measures at the upper part about thirty-three to thirty-five inches during expiration, and is increased fully three inches upon inspiration.

PERCUSSION.

Percussion, or “The act of striking,” to ascertain the composition of structures, affords signs and information of great value in diagnosis.

There are two methods employed, *immediate* and *mediate*.

Immediate, or direct percussion, is performed by striking the thorax directly with the points of the fingers or the palmar surface of the hand. This method of percussion has been generally abandoned, as it does not enable us to distinguish, with sufficient correctness, between the various shades of difference in the pitch or quality of percussion sounds.

Mediate, or indirect percussion, may be practiced in three different ways, to wit:—

First:—With the finger of one hand interposed between the body percussed and the percussing finger.

Second:—With the finger acting as a pleximeter and the percussion hammer.

Third:—With the percussion hammer and the pleximeter.

The first of these modes affords the most correct and ready information regarding the *resistance* of the parts percussed. The skillful use of the fingers is more difficult to acquire than that of the pleximeter and hammer; and if the examiner has acquired sufficient skill

in its performance, an absolutely accurate result may be obtained. "He who is skilled in digital percussion will be able to percuss equally well with the hammer, the inverse of which does not always hold good." In addition to being proficient in the technical *modus operandi*, it is necessary to possess a sensitive ear, educated to distinguish between the various shades of the sounds.

When the fingers are employed, it is a matter of choice whether one or more fingers are used as the pleximeter. Usually the last phalanx of the first or second fingers of the left hand are used, the other fingers being *raised from the chest, so as not to interfere with the sound vibrations*; they should be applied *firmly and evenly* to the surface, thus preventing the slipping of the soft parts, and also to determine the resistance of the chest walls when the blow is given. The *rounded ends* of the first and second fingers of the right hand are used as a hammer, striking the pleximeter fingers in such a manner that the nails shall not touch the skin of the underlying fingers. The force employed varies in different regions, but usually, for the chest, should be only of moderate degree. Forcible percussion is of use only when the sound of deep-seated organs is desired.

The *stroke* should be made perpendicularly to the surface and not slanting, as is too often done. The whole movement should proceed only from the *wrist-joint*, and ought not to be too rapid or unequal, or of great force, the fingers being rapidly withdrawn, so as not to interfere with the vibrations.

The **objects of percussion** are to elicit certain *sounds*, and the amount of *resistance* or *elasticity* of the organs percussed.

The main sounds elicited by percussion are the *dull, clear* and *tympanitic*. Familiarity with the *intensity, character* and *pitch* of each of these sounds is essential.

When percussing the healthy chest, the sound obtained is termed the *normal pulmonary resonance*. It is of variable *intensity*, depending upon the force of the stroke employed and the amount of adipose and muscular tissues covering the thorax, and the *tension* of the chest walls.

There is no exact standard of the normal pulmonary or vesicular resonance, but if the two sides of the chest are compared, the normal standard of each person is obtained.

The *character* is termed *pulmonary* or *clear*, as characteristic of the healthy chest wall. The *pitch* is always relatively *low*.

The sounds elicited by percussing a healthy chest are not, however, alike over all its parts.

Anteriorly, the portion of lung above the clavicle yields a sound which becomes somewhat *tympanitic* as the trachea is approached.

Over the *clavicle* the sound is *clear* and pulmonary at the centre of the bone, but at the scapular extremity it is duller, and towards the sternum it becomes somewhat tympanitic.

At the *infra-clavicular region* the resonance is *clear* and distinct, but little resistance being offered to the percussing finger, and the sound elicited may be taken as the type of the pulmonary resonance. In this region, however, a slight disparity exists between the two sides; on the right side the sound is less clear, shorter and of a higher pitch than on the left side.

In the *mammary region* of the right side the resonance of the lung is not so clear, the sound being modified by the size of the mamma and the upper border of the liver. On the left side the heart deadens the sound from the fourth to the sixth rib, and in a transverse direction, from the sternum to the left nipple. This dull sound in the left mammary region is lessened in extent during full inspiration, and in emphysema, when the lung more completely covers the heart.

In the *infra-mammary region* on the right side the percussion note is *dull*, except during the act of complete inspiration, when the liver is displaced downward by the inflated lung. In the left *infra-mammary region* the sound consists of a mixture of the dull sound of the heart and spleen and of the clear sound of the lung, together with the tympanitic sound of the stomach.

Over the upper part of the *sternum*—above the third rib—the sound is slightly *tympanitic*. Below the third rib, over the sternum, the sound is dull, due to the presence of the heart and liver.

The *position* exercises some influence on the results of percussion. More accurate results are obtained when the patient is standing or sitting than when recumbent. While the front of the chest is percussed, the arms should hang loosely by the sides; the hands may be clasped across the top of the head during the percussion of the axillary region; during the examination of the back the head must be bent forward and the arms tightly crossed in front.

On the *posterior* surface of the chest the sound also varies according to the part percussed.

Over the *scapulæ* the sound is *duller* than between these bones or below their inferior angles.

Over the *infra-scapular region* a *clear* sound is obtained as far as the lower border of the tenth rib on the right side, where the dullness of the liver begins. On the left side, below the angle of the scapula, the percussion sound is tympanitic if the intestines are distended, or it may be slightly dull if the spleen be enlarged.

In the *axillary* region the sound is *clear* and distinct on each side.

In the *infra-axillary* region of the right side the sound is *duller*, owing to the presence of the liver; at the corresponding situation on the left side, the sound is *clear* or *tympanitic*, from the distention of the stomach, and at the ninth or tenth rib of the left axillary region dullness and the sense of resistance mark the location of the spleen.

The sounds obtained by percussion of the *unhealthy* or abnormal chest are as follows:—

First:—Hyper-resonance or increase of the normal pulmonary resonance is due to the relative increase in the proportion of air to the solid tissues of the lung, providing the tension of the chest walls be not altered, to wit: emphysema, atrophy of the lungs, or consolidation of the opposite lung.

Second:—Dullness or absence of resonance due to the relative increase of solid tissues in proportion to the amount of air, to wit: different stages of phthisis, pneumonia, or pleurisy.

The *pitch is increased or heightened* in proportion to the diminution of the amount of the air and the increase of the solids.

If there be entire want of resonance the percussion note is said to be *flat*; if there is a slight decrease in the resonance of the part the note is said to be *impaired*.

The sense of *resistance* is greater, the more marked the consolidation of the lungs and the greater the tension of the chest walls.

Third:—Tympanitic, or the drum-like percussion note, is a non-vesicular sound having the character of that of the intestines; wherever heard it indicates the presence of air in conditions similar to that of the intestines, to wit: inclosed in walls which are yielding, but neither tense nor very thick.

When elicited over the chest it may be due to the transmitted sound of the distended stomach or colon. It is obtained over the chest in pneumothorax, in moderate pleural effusions above the level

of the liquid, over the seat of cavities in the pulmonary tissues, and in œdema of the lungs.

The *tympanitic* percussion note differs from the normal pulmonary resonance in being more ringing in character and of a *higher pitch*.

The *amphoric* or metallic sound is in reality a concentrated tympanitic sound of high pitch, and denotes a large cavity with firm, elastic walls.

The *cracked-pot* or *cracked-metal* sound is another variety of the tympanitic sound. The condition most commonly occasioning this sound is a cavity in the lung tissue, communicating with a bronchial tube. It requires for its development a strong, quick blow of the percussing finger, and the patient's mouth open.

RESPIRATORY PERCUSSION.

The percussion sound will vary greatly with the respiratory movements. If a full inspiration be taken and percussion performed, then a full expiration taken and percussion performed, and then the chest percussed during the normal respiration, slight changes in the character and pitch of the note are obtained, which otherwise would escape detection. Prof. Da Costa has designated this method, *respiratory percussion*.

AUSCULTATORY PERCUSSION.

This method consists in listening with a stethoscope applied to the thorax, to the sounds elicited by percussion. "It is a serviceable means of determining with accuracy the boundaries of various organs, as those of the lungs or heart, or of the liver or spleen, and yields particularly exact results when carried out with the double stethoscope."

AUSCULTATION.

Auscultation, or listening to the sounds produced within the chest during the act of respiration, coughing, or speaking, furnishes the most reliable means of studying the condition of the lungs, and is, therefore, the most valuable method of discriminating the various conditions which may affect the organs of respiration.

Auscultation is either *immediate* or *mediate*.

It is *immediate* when the ear is applied directly to the chest, which may be either denuded or thinly covered.

It is *mediate* when the sounds are conducted to the ear by means of a tubular instrument, termed a *stethoscope*.

For ordinary purposes, *immediate*, or direct auscultation is sufficient, but when it is desirable to analyze circumscribed sounds, as in diseases of the heart, or where the patient objects to this method, on the score of delicacy, or the auscultor objects, on account of the uncleanliness of the person examined, the stethoscope is to be preferred. Moreover, there are certain parts of the chest which can only be explored satisfactorily by the aid of a stethoscope, and moreover, this instrument has the additional advantage of *intensifying* the sound.

In auscultation, the following rules, formulated by Prof. Da Costa, should be observed :—

“ 1. Place yourself and your patient in a position which is the least constrained and permits of the most accurate application of the ear or stethoscope to the surface. Above all, avoid stooping, or having the head too low.”

“ 2. Let the chest be bare, or what is better, covered only with a towel or a thin shirt.”

“ 3. If a stethoscope be employed, apply closely to the surface, but abstain from pressing with it. This may be obviated by steadying the instrument, immediately above its expanded extremity, between the thumb and the index finger.”

“ 4. Examine repeatedly the different portions of the chest, and compare them with one another while the patient is breathing quietly. Making him cough, or draw a full breath, is, at times, of service; especially the former, when he does not know how to breathe.”

SOUNDS IN HEALTH.

If the ear be applied over the *larynx* or *trachea* of a healthy person, a sound is heard with both the act of inspiration and expiration. Its *intensity* is *variable*, its *pitch* *high*, and its *quality* *tubular* (to wit : a current of air passing through a tube—the larynx or trachea). The duration of the sound during inspiration being somewhat longer than during expiration. A *short pause* follows the act of expiration.

This sound is termed the *normal laryngeal respiration*, and is identical in character, duration and pitch with an important morbid sound, termed *bronchial respiration*.

The sound heard by placing the ear over the lung tissue is different; it is produced in the very finest bronchial tubes and air cells by their expansion and contraction, and is termed the *normal vesicular murmur*.

The *inspiratory portion of the sound* is of *variable intensity*, its *pitch is low*, its *quality soft and breezy*, designated *vesicular*; its *duration* is during the entire act of inspiration.

The *expiratory portion of the sound* is not always perceptible; it is of *feeble intensity*, *very low pitch*, its *character soft and blowing*, and its *duration* much less than the act of expiration.

It is to be remembered, however, that the vesicular murmur will be found to vary in the different regions on the same side, and in corresponding regions on the two sides of the chest. These variations within the range of health are especially important, and should be memorized.

Infra-clavicular Region.—The vesicular murmur in this region on either side is much more distinct than over any other part of the chest.

On the left side the *inspiratory sound* is of greater intensity, of *lower pitch*, and more distinctly vesicular in quality than that heard upon the right side. On the right side the *expiratory sound* is nearly or quite the same in length as the inspiratory sound, and is *higher in pitch* and more *tubular* in quality than the expiratory sound upon the left side.

Supra-scapular Region.—Owing to the small number of air vesicles and the large number of bronchial tubes, and their nearness to the surface, the respiratory murmur has an intense, high-pitched, tubular and expiratory quality.

Scapular Region.—Compared with the infra-clavicular region, the respiratory murmur heard over the scapulæ on either side is more feeble, and the vesicular quality less marked.

Inter-scapular Region.—The murmur in this region differs from the normal laryngeal breathing only in intensity and duration.

Infra-scapular Region.—The murmur in this region very closely resembles that heard in the left infra-clavicular region.

Mammary and Infra-mammary Regions.—The murmur in these regions differs from that heard in the infra-clavicular region, in being of less intensity.

Axillary and Infra-axillary Regions.—The respiratory sound in the axillary regions is as intense as in any portion of the chest. In the infra-axillary regions the intensity is less and the pitch lower.

VOICE IN HEALTH.

If the ear be applied over the larynx or trachea of a healthy person, and he be directed to count “twenty-one, twenty-two, twenty-

three," in a uniform tone and with moderate force, there is perceived a strong resonance, with a sensation of concussion or shock, and a sense of vibration, thrill or fremitus, the voice seeming to be concentrated and near the ear. Often the articulated words are distinctly transmitted (laryngophony).

The sounds thus heard are termed the *normal laryngeal resonance*.

If the ear or stethoscope be applied over the third rib anteriorly, on either side of the chest of a healthy person, and he be directed to count "twenty-one, twenty-two, twenty-three," in a uniform tone, with moderate force, a confused, distant hum is perceived, of variable intensity, accompanied with more or less vibration, thrill or fremitus, most distinct in adults, but notably weaker in women than in men.

This sound is termed the *normal vocal resonance*.

If the ear or stethoscope be applied over the third rib anteriorly, of a healthy person, and he be directed to *whisper*, in a uniform manner, the words "twenty-one, twenty-two, twenty-three," there is heard a sound corresponding closely in character to the sound of expiration over the same region during the act of forced respiration; or, in other words, a feeble, low-pitched blowing sound.

This sound is termed the *normal bronchial whisper*, and is produced by the air in the bronchial tubes during the act of expiration.

SOUNDS IN DISEASE.

The vesicular murmur may undergo, in disease, changes in its *intensity*, its *rhythm*, and in its *character*.

The **intensity** of the respiratory murmur may be:—

1. *Exaggerated* or *increased*.
2. *Diminished* or *feeble*.
3. *Absent* or *suppressed*.

Exaggerated respiration differs from the normal vesicular respiration only in an increase in the intensity of the respiratory sounds. When general over one lung, it will usually indicate deficient action of other parts. In this manner effusion compressing one lung, one-sided deposits, obstruction of the bronchial tubes by secretion, or inflammation of the lung structure, necessitate a *supplementary* respiration in a healthy portion of the same lung or the lung upon the opposite side. From its resemblance to the loud, strong, quick respiration of young children, it has been termed *puerile* respiration.

Exaggerated respiration is, therefore, to be regarded as indirect evidence of disease in some portion of the pulmonary tissue.

Diminished respiration, called also senile respiration, as being characteristic of old age, is characterized by diminished intensity and duration of the sound. In the large majority of instances the inspiration suffers the greatest, the expiratory sound not diminishing in the same proportion. In asthma, emphysema, diseases of the larynx and bronchial tubes, pleuritic pain, rheumatism or paralysis of the chest walls, or in thickening of the pleural membrane, we observe superficial or diminished respiration. When one side of the chest is *partially* filled with fluid, we may hear a deep-seated, but feeble breath sound.

Absent or suppressed respiration occurs whenever the action of the lung is suspended; this may be from external pressure, as when the lung is compressed by the presence of fluid or air in the pleural cavity, or when complete obstruction of the bronchial tubes prevents the air from either entering or escaping from the lungs.

The **rhythm** of the respiratory murmur may be—

1. *Interrupted or jerky.*
2. *The interval between inspiration and expiration prolonged.*
3. *Expiration prolonged.*

In health the inspiratory and expiratory sounds are even and continuous, with a short interval between each act; this may be altered in disease and both sounds, especially the inspiratory, have an interrupted or jerky character, termed “cog-wheel respiration.”

This **jerky breathing** is noted in some spasmodic affections of the air tubes, in hysteria, the earliest stages of pleurisy, pleurodynia, and the early stages of pulmonary phthisis. It is most frequently associated with phthisis, due probably to the adhering to the walls of the finer bronchial tubes of tough mucus, which obstructs the free entrance and exit of the air; it is usually most notable under the clavicles.

The **interval between inspiration and expiration** may be **prolonged**, instead of these two sounds closely succeeding one another. When this occurs the inspiratory sound may be shortened, or the expiratory sound may be delayed in its commencement. If the inspiratory sound is shortened, it is the result of consolidation of the lungs; if the expiratory sound is delayed, it is the result of lessened elasticity of the lung structure, and is most commonly associated with emphysema.

Prolonged expiration denotes that the air is obstructed in its exit from the lungs. It may be the result of diminished elasticity, the result of emphysema, or from the deposits of tubercles, which impair the contractile power of the lungs. If the former, it is associated with clearness on percussion; if the latter, however, with impaired resonance on percussion. When prolonged expiration is detected at the apex of the lung, and is associated with impairment of the normal pulmonary resonance, it is for the most part the result of a tubercular deposit.

The **quality** of the respiratory murmur may be

1. *Harsh*, termed *vesiculo-bronchial respiration*.
2. *Bronchial*.
3. *Cavernous*.
4. *Amphoric*.

Harsh respiration, or, as it is termed by Prof. Da Costa, *vesiculo-bronchial* respiration, is that variety in which both the inspiratory and expiratory sounds have lost their natural softness. It generally indicates more or less consolidation of lung tissue. In normal vesicular respiration the sounds produced by the air expanding the air cells and finer bronchial tubes obscures the sound produced by the passage of air through the larger bronchial tubes, the healthy lung being an imperfect conductor of sound, so that as soon as any portion of the lung becomes consolidated the vesicular element of the respiratory sound is diminished, the bronchial element becoming prominent. *Harsh respiration* is, then, a union of the vesicular and bronchial sounds, being a vesicular sound mixed with some of the qualities of a bronchial sound, the expiration being prolonged and tubular in character. It is present when the bronchial mucous membrane is swollen, as in the earlier stages of bronchitis, also in the earlier stages of phthisis and pneumonia.

Bronchial respiration is characterized by an entire absence of all the vesicular quality. *Inspiration* is of *high pitch* and *tubular* in character; *expiration* still *higher in pitch*, of greater intensity, *prolonged* and *tubular* in quality; the two sounds being separated by a brief interval.

The bronchial respiration encountered in disease closely resembles that heard in health over the larynx or trachea. Whenever bronchial respiration is present where, in health, the normal vesicular murmur should be heard, it indicates consolidation of the lung structure.

Cavernous respiration is a variety of the bronchial respiration, at least so far as the quality of the sound is concerned. It is essentially a blowing sound, yet not always heard during both the act of inspiration and expiration, being often only perceptible in the one, and in the other mixed with gurgling sounds. Its *pitch* is lower than that of ordinary bronchial respiration, and its *character* is hollow.

For its production there must be a cavity of considerable size in the lung substance, not filled with fluid, near the surface of the chest walls, communicating with a bronchial tube. It is met with most commonly in the last stages of pulmonary consumption, although hollow spaces of any kind, from abscess or dilatation of the bronchial tubes, occasion it.

Amphoric respiration is a blowing respiration, having a musical or metallic quality. It is a variety of bronchial respiration produced in a large cavity with firm walls, permitting the reflection of the sound. An imitation of this sound, though only an imperfect one, is produced by blowing over the mouth of an empty bottle. The amphoric character is present with both the act of inspiration and expiration.

Amphoric or metallic respiration is indicative of a large cavity, not common in phthisis, but much oftener heard at the upper part of a lung compressed by fluid and air, as in pneumo-hydro-thorax.

RÂLES.

Râles, or as they are termed, *adventitious sounds*, because they have no analogue in the healthy state, cannot be considered as modifications of the normal respiration.

Grouped according to the anatomical situation in which they are produced, we have :—

1. *Laryngeal and tracheal râles.*
2. *Bronchial râles.*
3. *Vesicular râles.*
4. *Cavernous râles.*
5. *Pleural râles.*

Râles may be divided into two groups, according to their character, to wit: *dry* and *moist*, and may be audible either during the act of inspiration or expiration, or during both.

Dry râles, for the most part, are produced by the *vibration* of

thick fluids which the air cannot break up, and which, therefore, temporarily lessens the calibre of the bronchial tubes. When this narrowing exists in the smaller bronchial tubes the resulting sound is *high-pitched*, or the râle is said to be *sibilant* or whistling; when the narrowing exists in the larger bronchial tubes, the râle is *low-pitched*, more musical in character, or *sonorous*.

Dry râles are particularly prone to be dislodged by coughing, and when they are uninfluenced by the acts of breathing or coughing, they do not depend upon the presence of secretions, but upon the narrowing of the air tubes from the pressure of tumors, or from a thickened fold of mucous membrane, or from a spasmodic contraction of the air tubes.

Moist râles are those produced by the air passing through thin fluids, such as mucus, blood, serum, or pus, during the respiratory movements. When the fluid exists in the smaller bronchial tubes, the râles are termed *small bubbling*, mucous, or *subcrepitant*. When the fluid exists in the large bronchial tubes, the râles are said to be *large bubbling* or mucous.

Moist râles are not persistent, but vary in intensity, and shift their positions as the air drives the liquid which occasions them before it, or during violent attacks of coughing, or after copious expectoration.

Laryngeal and tracheal râles are those produced within the larynx and trachea, and may be either moist or dry. The moist or bubbling sounds, produced when mucous or other liquids accumulate in this part of the air tubes, frequently occur in the moribund state, and are then known as the "death rattles." When not due to this condition, they denote either insensibility to the presence of liquid, as in stupor or coma, or inability to remove liquid by the acts of expectoration, as in croup or inflammation of these parts in the very feeble.

The dry râles produced within the larynx or trachea are generally caused by spasm of the glottis, to wit: laryngismus stridulus, whooping cough or croup, or from the presence of a foreign body in the part.

Bronchial râles, resulting from the passage of air through the thin liquid, occasion bubbling sounds. When the liquid is present in the larger-sized bronchial tubes, the râles are said to be *large bubbling*, or large mucous râles, and are heard in acute or chronic bronchitis.

When the liquid is in the smaller bronchial tubes, the resulting râle

is called *small bubbling*, small mucous, or *subcrepitant*, also occurring in acute or chronic bronchitis.

Bronchial râles due to the narrowing of the tube by its spasmodic contraction, or to the presence of tough, tenacious mucus, which is set in vibration by the passage of the air through the bronchial tubes, are termed dry bronchial râles. Frequently they are suggestive of certain familiar sounds, such as snoring, cooing, humming or wheezing, or they are often musical notes. When produced in the smaller bronchial tubes, they are termed *sibilant*, or high-pitched râles; when produced in the larger bronchial tubes, they are termed *sonorous* or low-pitched râles. They principally occur in the dry stage of bronchitis, or during an asthmatic paroxysm.

The **vesicular râle**, or, as it is more commonly termed, the *crepitant* râle, is produced within the air vesicles or at the terminal portion of the smaller bronchial tubes.

It is to be distinguished from very fine bubbling sounds, or the subcrepitant râle. "*It is a very fine sound, or rather series of very fine uniform sounds, occurring in puffs and limited to inspiration.*" It resembles the noise occasioned by throwing salt on the fire, or alternately pressing and separating the thumb and finger, moistened with a solution of gum arabic, and held near the ear, or rubbing together a lock of dry hair near the ear.

The *crepitant râle* is produced by the movement of fluid in the air cells or in the finest extremities of the bronchial tubes, or by the forcing open, during the act of inspiration, of the air cells agglutinated by exuded lymph. These sounds may be defined as being very fine, dry, crackling sounds, heard at the end of inspiration. They are usually present in the first stage of pneumonia, and when limited to the apices, are significant of the incipient stage of phthisis.

Cavernous râles, or, as they are commonly termed, gurgling râles, are produced in a pulmonary cavity of considerable size, containing a large amount of liquid communicating freely with a bronchial tube. The sound is occasioned by the agitation of the liquid within the cavity, and may be compared to the sound produced by the boiling of liquid in a flask or large test tube. The sound is sometimes high-pitched or musical, whence it has been termed "amphoric gurgling," but it is generally low in pitch. The râle is heard almost exclusively during the act of inspiration, and its diagnostic importance relates to the advanced stage of phthisis.

Pleural râles may be either dry or moist.

Dry pleural râles, or, as they are more commonly termed, *friction sounds*, are occasioned when the surfaces of the pleuræ are covered with a glutinous substance preventing the unobstructed movements of the pleural surfaces upon each other during the respiratory acts, for in health these movements occasion no sound whatever. The sounds are generally interrupted or irregular, occurring during the act of inspiration or expiration, or during both acts. The character of the sound is variable, being termed rubbing, grazing, rasping, grating or creaking, according to the intensity of the respiratory acts and the amount of exudation.

They are distinguished by the apparent nearness of the sound to the ear, and are usually intensified by firm pressure of the stethoscope upon the chest. When the chest is fixed, especially at the lower two-thirds, and the ear applied over the seat of the sound, it will be found to have disappeared. This sound is diagnostic of the first stage of pleurisy.

Moist friction sounds are produced in the same manner as those just mentioned, the exudation being softened in character. This sound is frequently confounded with moist bronchial râles, and its discrimination is often only positive by a careful study of the symptoms and concomitant signs present.

Metallic tinkling is a sign of a pneumo-hydro-thorax with perforation of the lung, and when found is usually diagnostic of this affection, although it occurs rarely in cases of phthisis with a large cavity, the physical conditions for its production being similar to those in pneumo-hydro-thorax, to wit: a space of considerable size containing air and liquid, the space communicating with the bronchial tubes.

It consists of a series of *tinkling sounds*, of high pitch, silvery or metallic in tone, and is very well imitated by dropping a small marble into a metallic vase. It occurs irregularly, not being present with every act of breathing, and may be produced by forced, when not heard during tranquil breathing.

Were it not for the location and the absence of concomitant signs, it might be confounded with tinkling sounds sometimes produced within the stomach.

THE VOICE IN DISEASE.

The normal vocal resonance, as heard over the third rib of the chest anteriorly on either side, may have its *intensity*—

1. *Diminished or absent.*
2. *Increased or exaggerated.*

Or its resonance may be of the character of—

3. *Bronchophony.*
4. *Pectoriloquy.*
5. *Ægophony.*
6. *Amphoric voice.*

The vocal resonance may be diminished or feeble in bronchitis with free secretion, pleurisy with effusion, or in complete consolidation of the lung structure and the bronchial tubes.

The vocal resonance is absent in pneumothorax and in pleurisy with effusion.

Exaggerated vocal resonance differs from the normal vocal resonance in a slight increase of its density. It denotes a slight degree of solidification of lung tissue, and is chiefly of value in the diagnosis of tubercle.

Bronchophony, or the voice concentrated near the ear, raised in pitch and in intensity, denotes complete consolidation of the pulmonary tissue in those parts in which the sound is abnormally present.

Pectoriloquy is complete transmission of the voice to the ear, the articulated words being distinctly recognized. It has a close resemblance to the resonance heard over the larynx in health. Its presence indicates either a pulmonary cavity or more complete consolidation—in other words, an exaggerated bronchophony.

Ægophony is a modification of bronchophony, consisting in tremulousness of the voice, its character nasal or bleating, somewhat suggestive of the cry of a goat. When heard, it may be considered a sign of pleurisy with slight effusion, or pleuro-pneumonia.

Amphoric voice, or “the echo,” as it is sometimes called, is a musical sound, of a somewhat hollow, metallic character, like that produced by blowing into an empty bottle. It is sometimes produced in large cavities within the lung, but is especially incident to pneumothorax.

Increased bronchial whisper is a sound in which the whispered words are abnormally intense, and higher in pitch than the normal bronchial whisper. It has the same significance as exaggerated vocal resonance.

SUCCUSSION.

The **succussion** or splashing sound is pathognomonic of one affection, namely, pneumo-hydro-thorax.

It is obtained by jerking the body of the patient with a quick, somewhat forcible movement, the ear being very near or in contact with the chest.

The sound is like that produced when a small keg, partially filled with liquid, is shaken. The only liability to error is in confounding this splashing sound with that sometimes produced within the stomach; but attention to concomitant signs and the symptoms will always protect against this error.

ASSOCIATION OF THE PHYSICAL SIGNS (DA COSTA).

"As many of the signs elicited by the various methods of physical diagnosis depend on the same physical conditions, they may be studied in groups. The following will be usually found to be associated:"—

PERCUSSION.	AUSCULTATION OF RESPIRATION.	AUSCULTATION OF VOICE.	VOCAL FREMITUS.	PHYSICAL CONDITIONS.
Clear.....	Vesicular murmur or its modification.	Normal vocal resonance.	Unimpaired.	Lung tissue healthy or nearly so; at any rate, no increased density from deposits, etc.
Dull.....	Bronchial, or harsh respiration.	Bronchophony.	Increased.	Solidification of pulmonary structure.
Tympanitic.	Absent respiration.	Absent voice.	Diminished or absent.	Effusion into pleural sac.
	Cavernous or feeble, according to cause.	Uncertain; cavernous or diminished.	Uncertain; mostly diminished.	Increased quantity of air within the chest, due to a cavity or to overdistention of the air cells.
Amphoric or Metallic.	Amphoric or metallic.	Amphoric or metallic.	Mostly diminished.	Large cavity with elastic walls.
Cracked metal sound.	Cavernous respiration.	Cavernous respiration.	Uncertain.	Generally a cavity communicating with a bronchial tube.

DISEASES OF THE NASAL PASSAGES.

ACUTE NASAL CATARRH.

Synonyms. Acute rhinitis; acute coryza; "cold in the head."

Definition. An acute catarrhal inflammation of the mucous membrane (pituitary or Schneiderian membrane) lining the nose and the cavities communicating with it; characterized by feverishness,

feeling of fullness in the head, and attended with discharges of fluid, watery, mucus, or muco-purulent in character.

Pathological Anatomy. *Hyperæmia* of the mucous membrane, attended with redness, swelling and deficient secretion. This tumefaction is partly increased by an *œdematous infiltration*, causing a quantity of colorless, salty and very thin liquid to flow from the nose. The secretion soon becomes thicker and opaque, due to the desquamation of the epithelium of the nasal mucous membrane, and a copious generation of young cells, the hyperæmia and the swelling of the membrane diminishing.

The respiratory portions of the nasal fossæ are more markedly affected than are the olfactory.

Rarely, and then in new-born infants and those affected with the eruptive fevers, the exudation in the nasal passages is of a fibrinous nature, somewhat similar to that observed in diphtheria.

Causes. Atmospherical changes are the most frequent and influential. Exposure of the neck to a draft of cold air, or of the feet and ankles to cold and dampness, or changing from a warm to a cold atmosphere suddenly, are among the most usual causes.

Irritating gases and vapors, dust, certain powders, as ipecac and tobacco, excite an irritation of the nasal mucous membrane.

Acute coryza is usually present in the initial stage of measles and influenza.

Epidemic influence occasionally prevails on an extensive scale. The poison of syphilis or the use of the iodide of potassium not unfrequently act as exciting causes.

At times the catarrh seems to spread by contagion.

Symptoms. "A cold in the head" is usually preceded by a feeling of *lassitude* or weariness and more or less *headache*; then occur irregular *chilly sensations*, followed by more or less *feverishness* and an uncomfortable feeling of *dryness* in the nares, with a strong inclination to *sneeze*. This is soon followed by an abundant *watery and saline discharge*, which is continually dripping from the nostrils, or occasions an attack of sneezing followed by blowing the nose, which relieves the congested and swollen membrane for a few moments. The relief is temporary, however, the fullness of the head and difficult obstructed nasal respiration rapidly returning. *The anterior nares are red and inflamed.* The discharge soon assumes a *purulent* character. The *voice* has a peculiar tone, rather nasal

and muffled in character. Within a few days the swelling subsides, the secretion lessens, health being restored in about ten days from the beginning of the attack.

When the attack has almost terminated hard crusts may form within the nostrils, either on the septum or turbinated bones, which are with difficulty expelled by blowing the nose.

Complications. *Irritation* and *swelling* of the upper lip, from repeated blowing of the nose and the constant contact of the irritating discharge.

Extension of the catarrh to the *ethmoid* or *sphenoid cavities* or *frontal sinus*, causing increased and severe headache; or to the *antrum* of *Higmore*, causing tenderness over one or both cheeks.

Extension to the *Eustachian tube* and *middle ear*, causing impaired hearing; or to the *pharynx* or *larynx*, causing cough.

Duration. In mild cases about one week; severe cases continue, more or less marked, for two weeks.

Prognosis. Favorable if early and proper treatment be instituted; if neglected, the catarrh tends to become chronic. In very young infants, if the catarrh is not rapidly relieved, loss of flesh and strength occur, from inability to take the breast.

Treatment. Attacks the result of atmospherical causes may be aborted by the early administration of *quinina sulphas*, gr. x-xv, with *morphina sulphas*, gr. $\frac{1}{4}$, or the early use of *pulvis ipecacuanhae et opii*, gr. x-xv.

The following *errhine* used at the very onset has proved successful in *aborting* severe cases:—

R.	Amyli, finely powdered.....	3j	
	Cocaine hydrochlor	gr. ij-iv.	M.
SIG.—Every half hour.			

If the attack has already developed, relief is soon afforded by *tinctura belladonnæ*, gtt. ij every hour until six doses are taken, after which one drop every two or three hours until the physiological actions of the drug are produced; if much fever be present, *tinctura aconiti*, gtt. i-ij, may be added.

An efficient plan of treating acute coryza is by producing free diaphoresis with "Dover's powder," gr. x, repeated, if need be, followed by—

R. Potassii citratis.....	ʒ ij-iv	
Syrupi ipecac,		
Tinct. opii camph.....āā.....	ʒ ij-iv	
Syr. limonis.....	ʒ iv	
Aquæ.....ad.....	ʒ iij.	M.
SIG.—One or two teaspoonfuls every hour or two.		

With either of the above plans may be added one of the following *errhines*:—

R. Bismuth. subnit.....	ʒ vj	
Pulv. acaciæ.....	ʒ ij	
Morphinæ hydrochlor.....	gr. ij.	M.
SIG.—Every hour or two.—(Ferrier.)		

Or—

R. Pulv. cubebæ.....	ʒ j	
Bismuth. subnit.....	ʒ ij	
Morphinæ muriat.....	gr. ij.	M.

SIG.—Used by *insufflation* every two or three hours.

Or—

R. Pulv. fol. belladonnæ.....	ʒ j	
Pulv. morphinæ sulph.....	gr. ij	
Pulv. g. acaciæ.....ad.....	ʒ ss.	M.

SIG.—Use, with powder blower, to anterior and posterior nares. (Robinson).

Acute coryza occurring in infants at the breast is controlled by either one of the following *errhines*: throw into the nose, with a powder blower, finely powdered *saccharum alba*, or equal parts of finely powdered *saccharum album* and *camphoræ*, or Robinson's *errhine* of *saccharum alba* and *camphora*, each half ounce finely powdered and *acidum tannicum*, gr. xl.

Attacks of nasal catarrh due to the poison of syphilis should at once be placed upon the proper constitutional treatment.

Attacks of nasal catarrh associated with the eruptive or mild fevers require no special treatment.

It is well to remember that attacks of nasal catarrh occurring in very young children are generally the result of hereditary syphilis, and should be treated accordingly.

CHRONIC NASAL CATARRH.

Synonyms. Chronic rhinitis; chronic coryza.

Definition. A chronic inflammation of the mucous membrane lining the nasal passages, with more or less alteration of structure;

characterized by a sensation of fullness in the nares, increased secretion and a perversion of the special sense of smell and of hearing.

Causes. The result of repeated attacks of the acute variety; inhalation of irritating vapors and dust; syphilis and scrofula.

Pathological Anatomy. The mucous membrane of the nares is *thickened*, of a *dark-red*, sometimes *grayish color*, the superficial veins dilated and varicose, often forming polypoid enlargements. In many cases there is *ulceration* of the structure, with more or less loss of substance; the secretion is thick, tough, of a greenish character, and often very fetid; large collections of dried mucus are often formed upon the turbinated bones and septum.

Symptoms. A feeling of *fullness* in the *nares*, *increase* of the *secretion*, the character being thick and greenish, which, dropping posteriorly into the pharynx, causes paroxysms of "hawking," which are more marked in the morning immediately after arising.

The *special sense of smell* is more or less impaired, and, in many cases, entirely abolished; the *special sense* of hearing is more or less diminished, from an extension of the inflammation to the Eustachian tubes; the *voice* has a peculiar *nasal intonation*.

Sudden changes of temperature cause acute exacerbation of these symptoms, when there is superadded difficult nasal respiration.

If *ulceration* of the nares occur, the discharge has a *fetid odor*. This condition is termed *ozæna*.

From extension of the inflammation to the nasal duct or its obstruction, the tears flow over the malar eminence (*epiphora*), leading to more or less congestion of the eyes.

Diagnosis. Hypertrophy of the turbinated bones and nasopharyngeal catarrh are constantly misnamed chronic nasal catarrh. The rhinoscope readily determines the diagnosis.

Prognosis. Permanent cure is seldom obtained, the disease being so decidedly chronic and obstinate, the treatment is of necessity protracted, and the majority of patients tire of it before a complete cure is effected.

Treatment. If it depends upon diathetic conditions, the cause must be ascertained and treatment directed accordingly.

When no diathetic cause can be determined, attention should be paid to the general health, the secretions constantly attended to, and the diet be nutritious and digestible.

Cleanliness of the nasal passages is of the utmost importance, and is best effected by the *post-nasal syringe*, with either simple or medicated tepid waters, or a cleansing solution, such as Dobell's, to wit:—

R.	Acidi carbolicī.....	gr. j	
	Sodii bicarbonat,		
	Sodii borat.....āā.....	gr. v	
	Glycerini.....	ʒj	
	Aquæ.....	ʒj.	M.

SIG.—As a spray or with a proper syringe.

after which decided benefit follows the use of one of the following:—

R.	Sodii borat.....	ʒij	
	Bismuth. subnit.....	ʒij	
	Morphinæ muriat.....	gr. j.	M.

Or—

R.	Iodoformi.....	ʒj	
	Acid. tannici.....	gr. v	
	Pulv. camphoræ.....	ʒj	
	Bismuth. subnit.....	ʒj.	M.

SIG.—To be used by *insufflation* or as a *snuff*, every three or four hours;

Or—

R.	Ammonii muriat.....	ʒj	
	Glycerini.....	ʒij	
	Vini picis, liq.....	ʒij.	M.

SIG.—Five to ten drops, dropped into each nostril two or three times a day.

DISEASES OF THE PHARYNX.

ACUTE CATARRHAL PHARYNGITIS.

Synonyms. Catarrhal tonsillitis; angina catarrhalis; acute "sore throat."

Definition. An acute catarrhal inflammation of the mucous membrane of the tonsils, uvula, soft palate and pharynx; characterized by rigors, fever, painful deglutition, coughing, or constant desire to clear the throat, with a more or less decided nasal intonation of the voice.

Causes. Exposure to cold and damp; swallowing hot fluids or food; during the prevalence of scarlatina, measles or variola.

Pathological Anatomy. The mucous membrane and sub-mucous tissues of the uvula, soft palate, fauces, tonsils and pharynx are congested, red and swollen, the secretion is at first lessened or

entirely arrested, later it is increased, but of a thick, tenacious, opaque character. The swelling is most evident at the uvula, due to the amount of relaxed sub-mucous tissue, which is especially thick and long, often resting on the root of the tongue ("the palate is down").

Frequently one or both tonsils are swollen to such an extent that the fauces are completely occluded, and the condition is mistaken for the graver phlegmonous tonsillitis.

In severe attacks of catarrhal angina, white or grayish-white membranous masses, form in small, irregular, roundish spots on the reddened mucous membrane of the tonsils, soft palate and pharynx, causing the affection to be frequently mistaken for diphtheria.

Symptoms. The onset is usually sudden, with *rigors*, *fever*, thirst, headache, loss of appetite, coated tongue, bad taste, foul breath, *dryness in the throat*, *painful deglutition*, and *constant desire to clear the throat*, due to the increased length of the uvula; as the inflammation proceeds the *secretions* are increased, the fluid often filling the mouth and also causing a constant desire to swallow, each act being associated with acute pains. Not infrequently *earache* adds to the patient's distress, from extension of the "catarrh" to the Eustachian tubes and tympanum.

In severe attacks of catarrhal pharyngitis, cases which, from the intense hyperæmia, have been termed *erysipelatous* or *erythematous pharyngitis*, the muscles of the palate are infiltrated with serum, which greatly interferes with their function. Under normal conditions the contraction of the muscles of the anterior half arches of the palate prevents the return of the food and drink into the mouth; while the contraction of the muscles of the posterior half arches, together with the uvula, closes the passage to the nose; if the function of these muscles be impaired, fluids would be driven through the nose or back into the mouth by the contractions of the pharynx in the act of deglutition.

In all affections of the pharynx a *nasal* tone is pathognomonic, especially if the muscles of the half arches are interfered with.

Diagnosis. On account of the great swelling of the tonsils, it may be mistaken for *acute tonsillitis*; but the mild inflammatory symptoms should prevent the error.

Cases with membranous deposits upon the tonsils, soft palate and pharynx are no doubt often misnamed *diphtheria*; the marked difference in the constitutional symptoms should prevent the error.

Prognosis. Favorable, the affection terminating in three or four days by the raising of a quantity of thick, opaque mucus.

Treatment. Perhaps the most successful treatment of this affection is by *insufflation*, every hour or two, with *sodii bicarbonas*.

If the inflammatory symptoms are severe, *tinctura aconiti*, gtt. j-ij, at short intervals, is of decided advantage. At times *tinctura belladonnæ* may be added.

Locally, small *ice* pellets are useful, or heat or cold to the angles of the jaw. *Gargles* or *sprays* of *aluminis*, *ammonii murias* or *potassii chloras*, used at frequent intervals, often allay the congestion and consequent swelling.

ACUTE TONSILLITIS.

Synonyms. Amygdalitis; quinsy; phlegmonous pharyngitis.

Definition. An acute parenchymatous inflammation of one or both tonsils, with a strong tendency toward suppuration; characterized by moderate fever, pain in the throat, a constant desire to relieve the throat, painful and difficult deglutition, impeded respiration, and more or less muffling of the voice.

Causes. Generally attributed to exposure to cold, but, in the majority of cases, the exposure is so slight that there must be a predisposition to the affection; for persons once affected are particularly prone to repeated attacks, upon the slightest exposure.

Pathological Anatomy. One or both tonsils will be seen, on inspection, to project from its bed, as a rounded, deep red body, which may even extend beyond the median line, when they may entirely occlude the isthmus of the fauces; the half arches and posterior border of the soft palate are reddened and somewhat swollen. The surface of the tonsils is often covered with small, yellowish points, which closely resemble patches of false membrane, but careful inspection will show that they are beneath the mucous membrane, being only the distended follicles of the gland. The mucous membrane of the fauces and pharynx is more or less red and swollen.

Symptoms. Onset more or less sudden, with *rigors*, *rise in temperature* 102° to 104° F., *full, frequent pulse*, 100 to 120, *headache*, *thirst*, *pain and swelling at the angle of the jaw*, with a constant desire to clear the throat, *difficult and painful deglutition*, from the enlarged tonsils almost closing the fauces, when the *respiration* is more or less

impeded; the *voice* is more or less *muffled*, and attempts at phonation increase the pain.

Darting pains along the Eustachian tubes are of frequent occurrence, the patient complaining of *earache* and more or less *deafness*.

If *suppuration* be imminent, the throat becomes more *painful*, the character of the pain *throbbing*, the febrile phenomena increased, with more or less *depression*, the symptoms seeming to be of great danger, when suddenly, after an effort at vomiting, or spontaneously, the tonsillar abscess bursts, a quantity of pus escapes from the mouth, and prompt relief follows.

Duration. The disease lasts from three to seven days, terminating either by suppuration or the gradual resolution of the enlarged glands.

Diagnosis. Tonsillitis can hardly be mistaken for any other affection, if the fauces are inspected.

Prognosis. In the majority of cases the result is favorable, it very rarely proving fatal, except in children, and only then by obstructing the respiration, and, at the same time, so seriously interfering with nutrition that the child's strength fails.

Treatment. If seen early *scarification* should be performed, thereby relieving the engorged gland. The *external* use of *ice* over the site of the glands, and small pellets allowed to dissolve in the mouth, afford great relief. If the application of cold be objectionable, heat may be substituted, in the form of warm compresses or poultices.

If administered at the very onset, the inflammation may be *aborted* by *quininæ sulphas.*, gr. x-xx, combined with *morphinæ sulphas.*, gr. $\frac{1}{8}$ - $\frac{1}{4}$; free *emesis* is also recommended, for the same purpose.

After the inflammation is established, the administration of *tinctura aconiti*, in small doses, frequently repeated, rapidly reduces the temperature and frequency of the pulse, and, by its local action, lessens the pain and swelling. If from any cause the internal use of *aconitum* be contraindicated, the *tinctura aconiti* may be diluted with *glycerinum* and painted over the affected parts. The author has seen excellent results follow the use of *sodii salicylat.*, gr. x-xv, in solution, every hour, until four doses are taken, when the remedy is omitted for three hours, and again administered, as at first, or relief may follow *hydrargyri chloridum mite.*, gr. $\frac{1}{20}$, every two hours. Relief often attends the use of *tinctura guaiaci ammoniat.*, fʒj in milk, every two hours; or

R. Tinct. ferri chlor..... f ʒ ij
 Glycerini.....ad..... f ʒ ij. M.
 SIG.—Teaspoonful every two hours.

The following *gargle* is highly spoken of by those using it:—

R. Tinct. guaiaci ammon.,
 Tinct. cinchonæ comp.....āā..... f ʒ ij
 Mel. despumati..... ʒ vj.

M. and shake together until the sides of the containing vessel are well greased, then

Adde

R. Potassii chlorat..... ʒ iv
 Aquæ destil..... ʒ iv.

M. and add gradually, continuing shaking.

This should be used by the patient at intervals of every half an hour to an hour.

Insufflation with *sodii bicarbonas* is recommended.

If *suppuration* be impending *quinina* should be used, gr. iij-v, every three or four hours.

Locally, the application of poultices over the affected gland hastens the process of suppuration when once begun.

The *diet* must be in the shape of gruels, as it is impossible for the patient to swallow any solid substance, and in cases where even gruels cause painful deglutition, thin oatmeal gruel can be used with advantage.

DISEASES OF THE LARYNX.

ACUTE CATARRHAL LARYNGITIS.

Synonyms. Catarrhal laryngitis; “sore throat.”

Definition. An acute catarrhal inflammation of the mucous membrane of the larynx; characterized by feverishness, diminished or suppressed voice, painful deglutition, and more or less difficulty of respiration.

Causes. Atmospherical changes; the inhalation of irritating

vapors, such as gas, smoke, or ammonia, and in children, from violent attacks of crying.

Pathological Anatomy. In mild cases there is a transient *congestion* (hyperæmia) of the mucous membrane over the entire, but more commonly, circumscribed portions of the larynx, with more or less swelling and diminished secretion; the mucous membrane soon returns to its normal condition, the secretion being slightly increased.

Symptoms. The onset is rather sudden, with irregular *rigors*, a feeling of *heat*, *rawness* and *tickling*, referred to the larynx and pharynx, with a sensation of the presence of a foreign body in the throat. Swallowing causes pain by the upward movement of the larynx and by the pressure of the food on the larynx as it passes along the gullet.

Coughing, from the onset, of a *noisy*, *harsh*, *hoarse*, or *toneless* character; in children the cough has a ringing, sonorous, so-called "croupy" character, the act of coughing causing a sensation of scratching in the larynx. The first day or two there is scanty expectoration, but in a short time the secretion is increased, giving the cough a loose character. In the early stages the sputa may be slightly streaked with blood. The *voice* is at first decidedly *hoarse*, soon followed by complete *aphonia*.

Duration. Usually about one week; if very severe, two or three weeks may elapse before the larynx returns to its normal condition.

Prognosis. Simple catarrhal laryngitis never terminates fatally.

Treatment. Confinement to an apartment of uniform temperature, the air kept moist by the vapor of water disengaged in it.

Locally, a *hot or cold pack* should be kept constantly wrapped about the throat, and if its application is preceded by the temporary use of a weak mustard plaster, the relief afforded is more rapidly obtained. At the very beginning of an attack the feet should be placed in a hot mustard foot bath, and a *saline cathartic* administered.

Internally, *tinctura aconiti*, gtt. j-ij every half hour until three or four doses are taken, after which every hour or two, combined with *tinctura opii deodorat.*, gtt. j-v, relieve the inflamed mucous membrane, or instead, the use of *antimonii et potassii tartras*, gr. $\frac{1}{20}$ – $\frac{1}{30}$ every hour. If a tendency to spasm of the glottis obtains, full doses of the *bromides* should be administered at once.

CEDEMATOUS LARYNGITIS.

Synonym. Œdema of the glottis.

Definition. An inflammation of the mucous membrane of the larynx and that about the glottis, with a serous effusion into the sub-mucous connective tissue; characterized by obstruction to the respiration and difficult phonation.

Causes. The result of acute laryngitis; abscess in or about the throat or tonsils; erysipelas of the face; scarlatina; smallpox; Bright's disease.

Pathological Anatomy. Infiltration into the loose connective tissue of the ary-epiglottic folds, the glosso-epiglottic ligament, the base of the epiglottis, and the inter-arytenoid space. If the true vocal cords are inflamed, their color changes, and instead of appearing white, glistening and brilliant, they are dull, grayish-red or violet-red in patches. If the swelling be the result of purulent infiltration, the parts affected present a deeply congested color, with here and there spots of a yellowish hue.

Serous infiltration, sufficient to cause fatal œdema, disappears with death, leaving but slight traces to account for the formidable symptoms.

Symptoms. At the onset the same as those of catarrhal laryngitis, soon followed by a sensation of *distress*, and *pain* in the *throat*, with *difficulty of breathing* and *paroxysms of impending suffocation*. The *cough* at first is dry and harsh, but as the infiltration increases it becomes stridulous and suppressed. The *voice*, at first muffled, is soon suppressed. The *difficulty of respiration* in some cases becomes so great that the face becomes blue, the eyes protruding, the patient gasping for breath, these symptoms continuing for a few moments, when relief is temporarily afforded, the paroxysms soon recurring however, in one of which, unless decided relief be promptly afforded, the patient perishes.

Diagnosis. The points of difference between œdema of the glottis and capillary bronchitis, asthma and croup will be pointed out when discussing those affections.

But the history of the case, the sudden occurrence of suffocative attacks, an examination of the throat by passing the index finger carefully over the base of the tongue, will generally prevent the disease being mistaken for any other affection.

Prognosis. As a rule unfavorable; if early and vigorous treat-

ment be instituted, recovery is possible, but without it death is the inevitable result, the patient dying asphyxiated. The duration of infiltration of the larynx varies from a few hours to several days.

Treatment. At the onset, if the fever be high, the use of *tinctura aconiti*, gtt. ij-iv, repeated, with the administration of an active *purgative*, may prevent the serous effusion.

If the *infiltration* has already occurred and is slight in amount, *scarification*, guiding the instrument by the index finger of the opposite hand, may afford relief, or the hypodermatic injection of *pilocarpinæ nitratis*, gr. $\frac{1}{8}$, repeated. If these means fail, *tracheotomy* is indicated; in those cases of sudden and rapid infiltration of the glottis or larynx occurring in Bright's disease, erysipelas or scarlatina, and especially the former, *tracheotomy should be performed at once*.

In all cases of infiltration of the larynx stimulants should be boldly administered per rectum, if stomachic administration be impossible.

If the infiltration be composed of *pus*, *quininæ sulphas.*, gr. v doses every four hours, and stimulants are indicated.

SPASMODIC LARYNGITIS.

Synonyms. Spasmodic croup; false croup; catarrhal croup.

Definition. A catarrhal inflammation of the mucous membrane of the larynx, associated with *spasmodic contraction* of the glottis; characterized by paroxysmal coughing, difficulty of breathing and attacks of threatening suffocation.

Causes. Delayed or difficult dentition; excesses in eating and drinking; excitement; violent emotion and atmospherical changes, are all given as causes for simple croup. It is often hereditary.

Pathological Anatomy. *Congestion* of the mucous membrane of the larynx, with slight swelling and deficient secretion, are the only changes that have thus far been noted.

Symptoms. The attack occurs chiefly during the *night*, the child on retiring having either its usual health, or, perhaps, being a little feverish. After several hours of sleep the child is *suddenly awakened* by a *paroxysm of suffocation*, and a *dry, harsh, ringing cough*. After half an hour or an hour or two the breathing becomes easier, the cough less "croupy," the skin is covered with more or less perspiration, and the child falls asleep. The next day there is present cough of a loose

character, the respiration being about normal. If no treatment be instituted, the same phenomena occur on the second night, the child being apparently well during the second day, the cough being less in amount; phenomena of a similar character, but of much less severity, are present the third night, after which the disease usually disappears.

If the symptoms of the first paroxysm continue pronounced for two or three days, there is a strong probability that the inflammation may become fibrinous in character, or that true croup may develop.

Diagnosis. The symptoms are so characteristic that it seems impossible for the affection to be mistaken for any other disease.

Prognosis. Spasmodic or simple croup always terminates favorably.

Treatment. During the paroxysm, the child should at once be placed in a *hot bath* and *hot or cold compresses* wrapped about the throat. These means may be preceded or followed by a mild *emetic*. The *air* of the room should be *moistened* by the vapor of steam constantly disengaged in it.

For the prevention of an attack of spasmodic croup, a mild cathartic, followed by *potassii bromidum*, gr. x-xv, combined with minute doses of *antimonii et potassii tart.*, or *ipecac*, are serviceable, the child, of course, being confined to the house for several days, on an easily assimilated diet.

CROUPOUS LARYNGITIS.

Synonyms. Membranous croup; true croup.

Definition. An acute inflammation of the mucous membrane of the larynx, attended with the exudation of a tough secretion—the *false membrane*—and the occurrence of *spasm of the glottis*; characterized by febrile reaction, frequent ringing cough, dyspnœa, with loud inspiratory sound, and altered or extinct voice, showing a strong tendency toward death by asphyxia.

Causes. A disease of childhood, most common in strong, vigorous, well-nourished males. Certain families present a strong, hereditary tendency. Most common during a humid winter.

Pathological Anatomy. Intense *hyperæmia* of the mucous membrane of the larynx, associated with *swelling*, *œdema* and marked

redness. There soon appears on the surface of the mucous membrane a grayish pellicle, rapidly coalescing and becoming thicker—the *opaque, false membrane*—which differs in extent, thickness and adhesiveness in different portions of the larynx. In all cases the false membrane is found on the vocal cords and inner surface of the epiglottis. The first *exudation* (membrane) softens by the serum which is exuded, and is then mechanically dislodged by acts of coughing or vomiting, but is followed by successive deposits upon the mucous membrane.

When the false membrane is detached the mucous membrane of the larynx is found unaffected, so far as the loss of structure is concerned. Several successive crops of membrane may occur after the detachment, or it may entirely cease to form after the removal of the first exudation.

On *microscopical examination* the false membrane is found to be composed of a fine network of fibrillæ, holding in their interstices leucocytes of an albuminous or fibrinous nature.

The false membrane may extend into the pharynx, but especially is it liable to extend into the trachea and bronchial tubes, and, as the inflammation extends downward, the character of the exudation changes from fibrinous to muco-purulent.

Symptoms. The onset of “true croup” is either suddenly, by an attack of spasmodic croup, or gradually, as an acute catarrh of the larynx, rapidly increasing in severity, with a feeling of *heat* in the throat, *huskiness* of the voice, *harsh cough*, *fever* and *thirst*, the hoarseness soon becoming marked, and the *cough* having a *metallic*, “*croupy*” character, rapidly *changing* to a *stridulous, husky* sound; every few minutes the child takes a sudden, deep *stridulous inspiration*, the voice becoming more and more husky. *Difficulty of breathing* now follows, the child is unable to lie down, or if, exhausted by the efforts at inspiration, it is quiet for a moment, it soon starts up in fright, breathing more heavily, with a *shrill, whistling inspiration*. Soon, from the narrowing of the glottis, from the presence of the membrane, the expiration becomes difficult and noisy, and *suffocation* seems imminent, from the *paroxysmal* attacks of *spasm of the glottis*, when the child tosses wildly about, tears at its throat, as if to remove some obstacle, the face becoming *cyanosed*, the alæ of the nose working rapidly, the mouth wide open, the inspiratory efforts gasping, the body covered with a profuse sweat, and death seems imminent, when the

spasm is relaxed, air enters the chest, the breathing becomes somewhat easier, and the child, exhausted and partially stupefied, drops into a fitful sleep of a few moments' duration.

The *suffocative attacks* return at short intervals, or there occur decided remissions between them, considerable portions of the false membrane being expelled, when the child falls into a refreshing sleep.

In those cases which tend to a favorable termination, the appearance of improvement noted between the suffocative attacks is maintained, the paroxysms of suffocation becoming less frequent, the expectoration of membrane more marked, the difficulty of breathing lessens, the cough looser, the voice gradually returning, the fever, which has been more or less high during the attack, disappearing.

If, instead of improvement, the case tends toward a fatal termination, the suffocative attacks become more frequent, expectoration is absent, the voice and cough inaudible, although the efforts at speaking and coughing are visible, the difficulty of breathing continues, the respirations becoming more frequent and shallow, but without whistling and stridor, cyanosis deepens, the countenance has an indifferent, drowsy and stupid look, the eyes dull and nearly closed, with symptoms of depression, the pulse rapid and weak, the surface covered with a cold, clammy sweat, the extremities cold, stupor and insensibility more marked, the child dying of carbonic acid poisoning or *asphyxia*.

Duration. The duration of true croup is about one week, rarely continuing ten days.

Diagnosis. *Œdema of the glottis* may be mistaken for croup until the period of the formation of the characteristic membrane. The chief points of distinction from the onset are, however, absence of fever, paroxysmal attacks of difficult respiration, followed by a complete return to the normal condition.

Laryngeal diphtheria differs from true croup in its history, its epidemic character, the marked depression, even before obstruction of the larynx produces imperfectly aerated blood, the presence of albumen in the urine, and the sequelæ.

Prognosis. A very fatal disease. The danger is great in proportion to the age and feebleness of the child.

The *unfavorable symptoms* are: Loud, stridulous inspiratory and expiratory sounds, laborious and prolonged expiration, depression of the base of the thorax during inspiration, whispering voice or com-

plete aphonia, congestion of the face and neck, stupor, weak, rapid and irregular pulse, cold extremities, and a cold, clammy perspiration.

The *favorable symptoms* are: Expectoration of false membrane, decrease of the stridulous respiration, voice changing from whispering to hoarseness, looseness of the cough, moderation of the fever, and an improvement in the general condition.

Treatment. The *indications* for treatment are to *detach* and *remove the false membrane*, to *prevent its formation*, to *prevent the attacks of spasm of the glottis*, and to *maintain the strength*.

To detach and remove the membrane *emetics* are of the highest utility, the favorite of this class being the one first used in this disease by Dr. Fordyce Barker, consisting of *hydrargyri subsulphas flavus* (turpeth mineral), gr. ij for a child of two years of age, repeating the dose as often as rendered necessary by the obstructed breathing; but the unnecessary administration of emetics should be avoided, as the strength of the patient must be maintained.

To prevent the formation of the *membranous exudation* a number of remedies have been recommended and highly lauded by their respective proposers. If seen early, as the fever and husky voice are developing, *tinctura aconiti*, $\mathfrak{m} \frac{1}{4}$ -j, every fifteen minutes, and *quinina sulphas*, gr. ij-v, every hour until cinchonism is produced, are of unquestionable utility; another plan strongly urged is with *ammonii bromidum* in full doses alternated with *quinina sulphas*, gr. iij-v, every three hours; still another and popular remedy is *hydrargyrum*, which is certainly one of the most reliable agents we possess; it may be used as *hydrargyri chloridum corrosivum*, gr. $\frac{1}{8}$ - $\frac{1}{4}$, every two or three hours, or in the following formula:—

R. Hydrargyri chloridi mite..... gr. $\frac{1}{8}$ - $\frac{1}{4}$ - $\frac{1}{2}$
 Sodii bicarbonat..... gr. ij
 Pulvis ipecac..... gr. $\frac{1}{12}$ - $\frac{1}{6}$. M.

SIG.—One powder every two hours.

Antimonii et potassii tartras, a remedy that some years ago was popular in large doses, is again brought forward in doses of gr. $\frac{1}{30}$ - $\frac{1}{20}$. *Quinina sulphas*, gr. v, every three hours until six doses have been taken, if given before the exudation has formed, it is claimed will prevent its formation.

To prevent the paroxysms of spasm, small doses of *opium* in the form of *pulvis ipecac et opii* (Dover's powder), or full doses of the

bromides, preference being given to *ammonii bromidum*, as suggested by Prof. Bartholow, on account of its being "eliminated by the bronchial and faucial mucous membrane, thus acting locally."

To maintain the strength of the patient, *alcoholic stimulants* in full doses, nutritious but easily digested *aliment*, *quinina* in tonic doses, and *ammonii carbonas*, are particularly indicated.

Locally, the use of all caustic or irritating applications to the fauces or larynx is emphatically contraindicated.

The *inhalation* of the vapor of slaked, freshly burned lime is one of the most ready and efficient means for assisting in the detachment of the false membrane. The application of *cold or hot compresses*, according to the feelings of the patient, around the throat, have a strong tendency to prevent the recurrence of the spasms. After the formation of the membrane, great relief follows the use of the vapor inhalations and oxygen gas, which with stimulants and liquid nourishment may safely carry the patient through the disease. Cases in which the membrane presents a tendency to slowly loosen itself, if the patient's strength does not contraindicate it, are greatly benefited by the application of *sinapis*, or even small *flying-blisters*, to the larynx.

Relief from the obstructed respiration is obtained and the affection beneficially influenced by the use of "O'Dwyer's tubes."

If the exudation still continues, regardless of the means employed, the propriety of *tracheotomy* must be decided.

LARYNGISMUS STRIDULUS.

Synonyms. Spasm of the glottis; pseudo-croup; "Kopp's asthma."

Definition. A temporary spasm of the muscles of the larynx innervated by the inferior or recurrent laryngeal nerves; characterized by a sudden development of dyspnoea and the appearance of deficient oxygenation of the blood.

Causes. Most common in children, the result of teething, laryngitis, indigestion, scrofula or other cachexia. Attacks in adults are not uncommon.

Pathological Anatomy. Death the result of spasm of the glottis is such a very rare occurrence that the changes in the larynx are illy understood.

The mechanism consists in an irritation of the superior laryngeal nerve—the afferent nerve—whose function is to supply the mucous lining of the larynx with sensibility, whence is reflected through the inferior laryngeal nerve—the efferent nerve—the motor influence resulting in the spasm of the laryngeal muscles.

Symptoms. The spasm of the laryngeal muscles is of sudden onset, and usually after nightfall. The child may have been in perfect health, to all appearances, on retiring, or it may have shown symptoms of catarrh of the upper air passages, or been suffering from gastro-intestinal or dental irritation.

The child awakes suddenly, *coughing* in a metallic, resonant tone—the *croupy cough*—and with great *dyspnœa*, with *loud, crowing, stridulous inspirations*, the result of narrowing of the larynx from spasm, with *wheezy, stridulous expirations*.

The entrance of air is so greatly obstructed that all the accessory muscles of respiration are called into use, the lips and finger nails become blue, the surface cold, the countenance anxious, and the inferior portion of the chest is drawn in, instead of being expanded, during inspiration. General *convulsions* occur at times, during a paroxysm, also *strabismus*, and involuntary discharge of the fæces and the urine.

The paroxysm continues from half an hour to an hour or more, to return after a few hours' sleep, or during the following night; the cough, during the day, has the croupy character.

Diagnosis. The non-febrile and distinctly intermittent nature of the affection differentiates it from croup, and its own distinctive characters, from all other diseases.

Prognosis. Favorable. Death from suffocation during the paroxysm may occur in very young children, but it is certainly a very rare termination.

Treatment. For the *paroxysm*, the inhalation of a few drops of *chloroformum* is the most prompt method, due care being exercised; complete anæsthesia is unnecessary. Success is reported from the prompt inhalation of *amyl nitris*, also from *nitro-glycerinum*, in small, but frequently repeated doses; the following combination is a prompt antispasmodic :—

R.	Potassii bromidi.....	3 ij	
	Chloral.....	gr. xxxij	
	Syr. aurantii corticis.....	f 3 j	
	Aquæ menth.....	f 3 j.	M.

SIG.—One teaspoonful every half hour.

After the paroxysm has been suspended by the above combination, the tendency to a recurrence of the attacks is obviated by the steady and continued use of *potassii bromidum*, in moderate doses. *Emetics* are often useful in suspending an attack, especially if it be due to indigestion.

Locally, the *hot*, alternating with the *cold pack*, should be constantly applied to the throat.

DISEASES OF THE BRONCHIAL TUBES.

ACUTE BRONCHITIS.

Synonyms. Bronchial catarrh; acute catarrhal bronchitis; "cold on the chest."

Definition. An acute catarrhal inflammation of the bronchial tubes of the larger, middle and third size; characterized by fever, sub-sternal pain, a feeling of thoracic constriction, oppression in breathing, and at first scanty, followed by more or less profuse expectoration.

Causes. Most common in childhood and old age. More common in climates characterized by considerable moisture of the atmosphere combined with a low temperature, and especially where there are sudden and marked variations.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchial tubes, manifested by a diffused *redness*, *swelling*, *œdema* and *diminished secretion*; this is followed by an *increased secretion* and overgrowth and desquamation of the epithelial cells, together with a copious generation of young cells, the expectoration then becoming of a yellowish color. As a result of the hyperæmia, rupture of the capillaries of the mucous membrane frequently occurs, when the slight expectoration of the first stage is streaked with blood.

In cases of bronchitis following the exanthemata, or in scrofulous patients, the bronchial glands participate in the inflammation, they becoming hyperæmic, swollen and filled with secretion, and not unfrequently the glandular elements undergo a hyperplasia, and finally the "cheesy" degeneration.

Symptoms. The *invasion* is usually characterized by the occurrence of either nasal or laryngeal catarrh, or both, the patient feeling *chilly*, followed by *flushes of heat*, the *limbs, joints*, and even the *body*, are affected with *pain* of an aching, contused character, and with a sense of fatigue and want of energy; there may be a furred tongue, anorexia and constipation.

In nervous, irritable persons, and in children, there may be slight delirium, and often in very young children, especially during the period of dentition, convulsions may usher in an attack.

After a day or two of these initiatory symptoms, those characteristic of bronchial catarrh develop.

Pain is experienced *beneath the sternum*, especially toward its upper part, of a *raw, burning, or tearing* character, *aggravated* by a deep *inspiration* or by *coughing*; the pain also radiates toward the sides, following the course of the primary bronchial tubes. *Tenderness* over the sternum is often experienced.

Cough from the onset, at first in paroxysms of a hard, dry character, changing as the disease progresses, and becoming looser, followed by *free expectoration*. The *expectoration* at first is small in quantity, almost transparent, frothy, and having a salty taste, often streaked with blood. As the disease progresses it becomes more abundant, of a yellowish or a greenish-yellow color, and of a tenacious consistency.

There are present *slight fever*, hot, dry skin, frequent *pulse*, loss of *appetite*, moderate *thirst* and *constipation*.

A feeling of languor and weariness, and often considerable depression, quite out of proportion to the febrile state, are not infrequent.

Percussion. *Normal*, except in those rare cases in which the bronchial glands are involved, when irregular spots of dullness can be developed.

Auscultation. *First Stage:* The bronchial membrane being swollen and dry, the respiratory murmur is *harsh* or *vesiculo-bronchial* in character, associated with diffused *sonorous* and *sibilant* râles.

Second stage: The secretion from the bronchial mucous membrane

being increased, the respiratory murmur is *less harsh* in character but is associated with *large and small moist* or *bubbling râles*.

Diagnosis. The points of resemblance and difference between acute bronchitis and other diseases of the chest will be pointed out when those affections are described.

Prognosis. Acute bronchitis of the larger tubes usually terminates in complete resolution within two weeks. In children and the aged, the course is more protracted, and the symptoms more severe, but recovery is the rule.

Treatment. During the *invasion*, *quininæ sulphas*, gr. x, combined with *morphinæ sulph.*, gr. $\frac{1}{6}$, will usually prevent or abort an attack of acute bronchitis.

In the *first stage*, in adults, when the mucous membrane is swollen and dry, either of the following prescriptions will give prompt relief:—

R. Antimonii et potassii tart..... gr. ij
 Liquor. ammonii acetatis..... f $\frac{3}{4}$ iv
 Spts. ætheris nitrosi..... f $\frac{3}{4}$ j
 (Tinct. aconiti, if indicated)..... f $\frac{3}{4}$ ss
 Syr. simplicis.....ad..... f $\frac{3}{4}$ vj. M.

SIG.—One teaspoonful every two or three hours.

Or—

R. Liquor. potassii citratis..... f $\frac{3}{4}$ ij
 Vini vel syr. ipecacuanhæ f $\frac{3}{4}$ ss
 Succo limonis..... f $\frac{3}{4}$ iss. M.

SIG.—Tablespoonful every two or three hours.

If the cough of the dry stage be severe, or if looseness of the bowels follow the use of either of the above combinations, *tinctura opii camphorata* may be added with advantage.

For young children, the above in proportionately reduced doses, or the following:—

R. Pulv. ipecac et opii..... gr.x
 Pulv. scillæ..... gr.xij
 Hydrargyri chlor. mite..... gr.iv
 Sacch. lact..... gr.x.
 Ft. et chart. No. xij.

SIG.—One every two hours.

Locally: Hot mustard foot bath, and *sinapis* or *terebinthina stupes* over the chest, the patient being confined to an apartment in which the air is moistened by the vapor of hot water.

Second Stage : The secretion of the bronchial mucous membrane being copious, marked benefit follows the use of—

R. Ammonii muriat.....	℥ iv	
Mist. glycyrrh. comp.....	℥ iv.	M.

SIG.—Tablespoonful every three or four hours.

During the attack, attention must be given to the secretions and the diet of the patient.

CAPILLARY BRONCHITIS.

Synonyms. Broncho-pneumonia ; “ suffocative catarrh.”

Definition. An acute catarrhal inflammation of the *terminal* bronchial tubes, or bronchioles ; characterized by fever, impeded and increased respiration, impeded circulation, slight cough and scanty expectoration.

Causes. Most common in childhood, following exposure to cold or sudden changes of temperature ; associated with measles and whooping cough.

Pathological Anatomy. *Hyperæmia*, redness and swelling of the lining membrane of the bronchioles, with the exudation of a tough, tenacious secretion.

The air vesicles may remain unaffected, but in the majority of cases they are involved, producing the complication known as “ *catarrhal pneumonia*.”

In those cases in which the air cells are not involved in the inflammatory changes, the air passes, during the act of inspiration, through the secretion blocking the smaller tubes, but is prevented from escaping during the act of expiration, the secretion in the smaller tubes acting as a valve ; the result is distention of numerous vesicles, producing a circumscribed or diffused *functional emphysema*. If the secretion produces complete closure of any of the smaller tubes, the air previously drawn into the vesicles will be absorbed, causing *collapse* (atelectasis).

If the inflammation extends to the alveoli of the lungs, it produces the condition known as *broncho-pneumonia*, a frequent complication in children and feeble elderly people ; it is most commonly lobular in character, whence the term “ *lobular pneumonia*.”

Symptoms. Usually preceded by more or less ordinary bronchitis, followed by *rise of temperature*, 102–103° F., *difficult* and

increased respiration, with *paroxysms* in which the dyspnœa is markedly aggravated, when *cyanosis* rapidly develops.

The circulation through the lungs is impeded by the dyspnœa, the *pulse* becomes feeble and flickering, and there results general congestion of the venous system, the *countenance livid*, the *lips and nails blue*, the *surface cold*, and often covered by a *clammy perspiration*, the *mind dull*, and in children stupor and convulsions rapidly supervene, the result of the *non-aeration of the blood*. The *cough* is slight, but of a *suppressed* character, the *expectoration scanty*. When cyanosis occurs the cough may almost entirely cease; expectoration also ceases, death soon following, from *apnœa* and *depression*.

Percussion. *Normal*, except over those portions of the lungs which are in a condition of *collapse*, when dullness rapidly develops and may as rapidly disappear, changing to other portions of the lung.

Auscultation. *First stage*, *harsh* or *vesiculo-bronchial*, soon followed by *diminished respiratory murmur*, associated with *subcrepitant râles*.

Diagnosis. Capillary bronchitis is often mistaken for true catarrhal pneumonia, the points of distinction between which will be pointed out when discussing that affection.

Prognosis. In children, on account of their inability to expectorate, which leads to rapid collapse of the lungs, and in the aged, the prognosis is most grave. In the strong and vigorous recovery follows prompt and energetic treatment.

Treatment. From the very onset of the attack the treatment must be supporting, with the addition of such measures as seem to possess a controlling influence over the catarrhal process.

The patient must be confined to bed, well covered and the temperature varying between 75° and 80°, the air moistened with steam. In the first stage *dry cups*, mild *sinapis* applications or *terebinthina stupes* should be applied to the chest, after which it should be covered with an oil-silk jacket or the jacket poultice, if the child be not too young to permit so heavy an application without adding to the distress in the breathing.

The *diet* must be of the most nutritious character, the great aim being to sustain the powers of life until the catarrhal process has passed through its different stages, hence milk, eggs, chicken, mutton and beef broths, with the free use of *stimulants*, commenced early

and in amounts large enough to overcome the signs of depression which are present early in the attack.

If the *fever* be high, over 102° F., *quininæ sulphas* is indicated in full doses, for a child; the following is a good formula:—

R.	Quininæ sulphatis.....	ʒj	
	Acid. sulphurici dilut.....	q. s.	
	Spts. ætheris nitrosi.....	fʒiv	
	Syr. tolu.....	fʒiv	
	Aquæ menth. p.....	fʒj.	M.

SIG.—One teaspoonful every two or three hours.

For the *catarrhal* process either of the following, regulating the dose in accordance with the age of the patient:—

R.	Syr. ipecac	ʒv-xx	
	Spts. ætheris nitrosi.....	ʒv-xv	
	Tinct. opii camph.....	ʒv-xx	
	Tinct. scillæ.....	ʒv-xx	
	Liq. potassii citrat.....	ʒxl-ʒij.	M.

SIG.—Every two hours.

Or—

R.	Ammonii iodidi.....	gr. ij-v	
	Ammonii carbonat.....	gr. iij-v	
	Syr. glycyrrh	fʒss	
	Syr. tolu.....	fʒss.	M.

SIG.—Every two or three hours.

If *suffocation* is imminent the use of *emetics* is indicated; the most suitable are *ipecacuanha* or *hydrargyri subsulphas flavus*, care being taken not to repeat emesis so often as to produce exhaustion.

CROUPOUS BRONCHITIS.

Synonyms. Membranous bronchitis; plastic bronchitis; diphtheritic bronchitis.

Definition. An acute inflammation of the mucous membrane of the larger and middle-sized bronchial tubes, attended with an exudation, forming a membraniform layer, which is closely adherent to the mucous surface; characterized by febrile reaction, cough, difficult breathing, scanty expectoration, followed by the expulsion of the false membrane in the form of patches or casts.

Causes. Associated with membranous laryngitis from extension downward; asthma; emphysema; phthisis; but most commonly the

result of exposure to cold and damp, in those of strong and vigorous constitutions.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchial tubes, associated with *swelling* and *œdema*, during which the surface is covered with a whitish or grayish-white, firmly adherent, *membranous deposit*, cemented together by a coagulable exudation, and prolonged by rootlets from its under surface into the bronchial follicles, which sooner or later is loosened and detached by suppurative process and is expectorated after a violent fit of coughing or vomiting. When expectorated, the *false membrane*, as it has been termed, has either the form of patches or is thrown off entire from the bronchial tube, and may be found to consist of casts representing more or less of the bronchial subdivisions, and presenting an appearance not unlike "boiled macaroni."

On *microscopical examination*, the detached membrane presents fibrillæ which characterize fibrine or lymph in other situations, and if placed in a solution of acetic acid, it becomes greatly swollen, while ordinary mucus contracts and becomes more dense if added to the same solution.

Symptoms. There are no symptoms or signs by means of which this variety of bronchitis can be distinguished from ordinary catarrhal bronchitis, *prior to the expectoration of the false membrane.*

Expectoration is preceded and accompanied by *violent paroxysms of coughing*, and after more or less of the membrane has been raised a muco-purulent expectoration, streaked with blood, may be present for several days.

Duration. The inflammation may be either *acute, sub-acute* or *chronic*, expectoration of patches or strips of the membrane being repeated at intervals of days, weeks, months, or even years.

Prognosis. In adults, favorable, if not associated with other grave affections, such as phthisis, pneumonia or emphysema. In young children it may cause obstruction to the respiration, and not unfrequently proves fatal.

Treatment. As the character of the inflammation can seldom be determined until the membrane or portions of it have been expectorated, the treatment is at first the same as in cases of ordinary acute bronchitis.

As soon, however, as the character of the inflammation can be determined, active *emesis* is the most effective means of removing the

obstruction caused by the false membrane, the best agents of this class being either *hydrargyri subsulphas flavus*, *ippecacuanha*, or *zinci sulph.*, to be repeated as indicated.

Inhalations of the vapor of water, and especially of *lime water*, are highly serviceable.

To prevent the formation of membrane, Prof. Bartholow strongly urges the use of *ammonii iodidum* and *carbonas* combined, in small doses every hour or two. In a case treated by the author after this method, excellent results followed.

In cases showing a tendency to become chronic, good results will follow the application of flying *blisters* to the chest and the internal administration of *arsenicum* and some preparation of *pix liquida*.

CHRONIC BRONCHITIS.

Synonyms. Chronic bronchial catarrh; winter cough; secondary bronchitis.

Definition. A chronic inflammation of the mucous membrane of the larger and middle-sized bronchial tubes; characterized by cough and more or less profuse expectoration, plus, in many cases, the symptoms of *emphysema* of the lungs, which complicates the majority of cases.

Chronic *bronchitis* may be either *primary* or *secondary*.

Causes. *Primary*, the exposure to wet or cold, or the repeated inhalation of dust, vapors, or other irritants. *Secondary*, due to gout, rheumatism, syphilis, cardiac, renal or pulmonary diseases, or alcoholism.

Varieties. I. *Mucous catarrh*, associated with moderate expectoration. II. *Bronchorrhœa*, profuse expectoration. III. *Dry catarrh*, scanty expectoration. IV. Fetid bronchitis.

Pathological Anatomy. The mucous membrane of the bronchial tube is discolored, being of a more or less dull red, often of a deeply venous hue, mingled with a grayish or brownish color. These changes may be either in patches or extensively diffused. The vessels of the membrane are dilated. The mucous membrane is thickened, resulting in the reduction in the calibre of the tube and a roughening of its internal surface. The submucous tissue becomes infiltrated, contracted and indurated.

The elastic and muscular coats of the tubes become hyper-

trophied, lose their elasticity, and the cartilages become the seat of calcareous deposits.

As the result of the loss of elasticity and muscular tone of the tubes they become irregularly dilated, "*bronchial dilatation*." The dilations may be uniform in character, resembling somewhat the fingers of a glove, or they may be *sacculated* or *globular*, forming actual cavities in the bronchial structure.

In the *mucous variety* the secretion consists of young cells and mucous corpuscles, having a yellowish color; in the *dry variety*, the "catarrh sec" of Lænnec, or "dry bronchial irritation," the secretion is scanty, tough, semi-transparent, and occurs in defined globular masses; in *bronchorrhæa*, which is usually associated with bronchial dilatation, the secretion is abundant, greenish-yellow in color, and often fetid.

Symptoms. The most characteristic symptoms of chronic bronchitis are the *cough* and *expectoration*. Unless associated with other diseases, the general health suffers but little, if at all, constitutional symptoms being present only during acute exacerbations.

Mucous catarrh, or, from its occurring most commonly during the winter months, "winter cough," is characterized by paroxysms of cough, more or less violent, followed by the expectoration of a yellowish mucus.

Dry catarrh is characterized by a harsh cough, a feeling of soreness or rawness under the sternum, and the expectoration of *small globular masses*; this variety occurs with emphysema, gout, rheumatism and asthma.

Bronchorrhæa, which is associated with *bronchial dilatation*, and most common in the elderly, is characterized by paroxysms of severe coughing, followed by the copious expectoration of greenish-yellow, often fetid, mucus; the amount expectorated often amounts to four or five pints in the twenty-four hours.

Fetid bronchitis, often associated with bronchial dilatation, has an excessively fetid odor of the breath and expectoration. The decomposition of the secretion may cause gangrene of the bronchial mucous membrane, and even of the lung structure.

Percussion. Unless complicated with other affections, *normal*; if bronchial dilatation occur, there are *diffused* spots of the *tympanitic* or *amphoric* percussion sound, the physical condition being a circumscribed cavity containing air and connecting with a bronchial tube.

Auscultation. *Harsh* or *vesiculo-bronchial* respiration, associated with more or less profuse, *sonorous*, *sibilant*, and *large* and *small bubbling râles*; in *bronchial dilatation*, in addition to the harsh respiration, is found *broncho-cavernous breathing*, with large and small *gurgling râles*.

If *emphysema* complicate chronic bronchitis, the physical signs are somewhat modified, and will be pointed out when discussing that affection.

Prognosis. If unassociated with disease of the lungs or heart, chronic bronchitis is never dangerous to life, although the symptoms are present more or less continually, and aggravated upon the least exposure.

If associated with phthisis, emphysema, disease of the heart, or of the kidney, the prognosis is governed by those affections.

Treatment. Cases of chronic bronchitis, of whatever variety, should observe the following general rules: 1. Attention to the general health. 2. The clothing; wearing flannel the year round, or, what is better, silk under-clothing, taking care that the opposite extreme of too much clothing be not practiced.

The *medical treatment* is guided by the *cause*, *character* and *severity* of the disease.

If *secondary* to other affections, in the majority of cases remedies directed to the bronchial mucous membrane are *contra-indicated*. If the result of the rheumatic or gouty diathesis, in addition to the remedies directed to the disease itself, should be combined change to a warm climate, if possible, and a more or less protracted course of *potassii iodidum*, or *lithii citras*, or a residence at one of the *alkaline springs*.

For mucous catarrh, with acute exacerbations:—

R.	Ammonii muriat.....	gr. xv-xx	
	Vini picis, liq.....	℥ j.	M.

Three or four times in twenty-four hours.

Dry catarrh is greatly benefited by—

R.	Potassii iodidi.....	gr. v-x	
	Ext. eucalypt. fld.....	℥ _{xx}	
	Vini picis, liq.....	℥ j.	M.

Three times a day.

Or— R. Ext. cimicifugæ, fld..... ℥_{xx}
 Tinct. opii deodorat..... ℥_{ijj}
 Syr. prun. virg.....ad..... ℥_{ij}. M.
 SIG.—Every four hours.

For *bronchorrhæa*, *copaiba*, gtt. v–x every three hours, or *spts. terebinthinæ*, gtt. v, every four hours, or *acidum carbolicum*. gr. ss, four times a day, and at the same time using, *ol. morrhuæ* and *arsenicum*, or, if these means fail, inhalations of *alumen*, *acidum gallicum* or *acidum tannicum*.

If the *expectoration be fetid*, “fetid bronchitis,” Prof. Da Costa recommends the internal use of *acidum carbolicum*, gt. j every third hour, with *inhalations* of *acidum carbolicum*, gr. v, *aqua*, ℥j, two or three times a day.

Locally, irritation with *tinctura iodi*, or flying blisters, repeated once or twice weekly, is of advantage.

ASTHMA.

Synonyms. Nervous asthma ; bronchial asthma.

Definition. A paroxysmal spasmodic contraction of the muscular layer surrounding the bronchial tubes, and perhaps associated with a tonic spasm of the diaphragm, and more or less bronchial catarrh ; characterized by spasmodic attacks of great dyspnœa, continuing usually for several hours.

Causes. A true neurosis of the respiratory apparatus.

The result of peripheral or local disturbances in the nervous system, often hereditary ; pressure on the pneumogastric nerve ; dyspepsia and constipation, resulting in irritation of the end organs of the pneumogastric ; uterine, hepatic, or nephritic disease ; inhalation of various substances, as ipecac, turpentine, or irritating dusts ; climate ; mental and moral influences.

Asthma is more common in men than in women ; in childhood and young adults than those of middle life and old age ; in the well-to-do and wealthy than in the poor.

Symptoms. The onset of a *first attack* of asthma is *abrupt* and *sudden*, the succeeding attacks being preceded by *prodromes*, which the individual rapidly learns to appreciate, to wit : *coryza*, *bronchial irritation*, *thoracic constriction*, marked *dyspepsia*, or a large passage of pale, limpid urine, the “hysterical urine.”

The *paroxysm* begins, in the majority of cases, in the *early morning hours* or during the *afternoon*, with a *feeling of anguish* and *constriction in the chest* and an *intense desire for air*. The *breathing* is accompanied with *loud wheezing*, the *face is flushed*, at times even *cyanosed*, and *bathed in perspiration*, the *eyes stare*, the *eyeballs protrude*, and the muscles of the neck become prominent as they aid in the effort for air. The *dyspnœa* soon becomes so severe that the *inspiration is but a gasp*, the *lips are pallid*, *cyanosis deepens*, and the patient feels as if death were impending.

After some minutes or hours the *respiration* becomes *easier*, more air enters the lungs, the cyanosis disappears, and gradually the paroxysm ceases, the patient feeling exhausted and the chest fatigued.

During the paroxysm there is a short dry cough, becoming looser as the attack subsides, the expectoration either consisting of white pellets of mucus, at times streaked with blood or profuse watery mucus.

The *duration* of an attack varies from three to ten hours. Instead of single paroxysms, slight remissions may occur at intervals of one, two or three hours, to be followed by exacerbations lasting from four to six hours, continuing for a week or two, preventing the patient lying down or taking food.

Percussion. During the paroxysm, *hyper-resonance* over both lungs, termed *vesiculo-tympanitic*, the "bandbox tone" of Bamberger.

Auscultation. *First stage feeble* or *absent vesicular murmur*, with prolonged expiration associated with loud *wheezing*, *whistling*, *sibilant* and *sonorous râles*; as the *paroxysm subsides* the vesicular *breathing* becomes more apparent and is associated with *moist râles*.

Prognosis. In itself asthma is not fatal to life; but if the paroxysms are frequently repeated there results either *emphysema*, *cardiac dilatation*, with subsequent dropsy, or even cerebral hemorrhage.

Attacks of asthma frequently occur as a complication in emphysema, chronic bronchitis and valvular diseases of the heart.

Treatment. There are two indications, to wit: the relief of the paroxysm, and to prevent its recurrence.

To relieve the paroxysm, no medication is so effective as the *hypodermatic* injection of *morphinæ sulph.*, gr. $\frac{1}{6}$ to $\frac{1}{4}$, combined with *atropinæ sulph.*, gr. $\frac{1}{120}$. *Chloral*, gr. x, repeated, where no heart complication exists, is often effective; *chloroformum*, *æther* or *amyl*

nitris inhalations have been recommended; also *nauseant expectorants*, to wit: *lobelia*, *ipêcac*, *scilla*, or *ext. grindeliæ fld.*, gtt. xx, repeated every two or three hours.

Dr. Pepper speaks highly of the following for the paroxysm:—

R. Ammonii bromidi.....	ʒ ij-ʒ ij	
Ammonii muriat.....	ʒ iss	
Tinct. lobeliæ.....	f ʒ ij	
Spts. ætheris comp.....	f ʒ j	
Syr. acaciæ q. s.....	f ʒ iv.	M.

SIG.—Dessertspoonful in water every hour or two.

Inhalations of the fumes of belladonna, stramonium, nitre-paper, chloroform, ethyl bromidum, or the use of various pastilles or cigarettes, are of immense benefit in many cases.

Paroxysms of asthma are said to be relieved by *rectal injections* of *sulphuretted hydrogen* after the manner suggested by Bergeon of Paris.

If an *attack* is *impending* it may often be aborted by drinking freely of strong *black coffee*, or by full doses of the *bromides*.

To prevent recurrence of the paroxysms, the general health must be strictly watched, any of the complications or causes of the attack attended to, systematic exercise, bathing, regulated diet, and change of climate when possible.

Internally, good results are sometimes attained by a long course of *belladonna*, *arsenicum* or *potassii iodidum*.

HAY ASTHMA.

Synonyms. Hay fever; autumnal catarrh; rose fever.

Definition. An acute catarrhal inflammation of the upper air passages, extending to the bronchial tubes, associated with spasmodic contraction of their muscular layer; characterized by coryza, croupy or wheezy cough and difficult respiration.

Causes. An affection of the nervous system; often hereditary.

Persons in whom the predisposition exists have attacks excited by the inhalation of the pollen of grasses, rye, corn, wheat or roses.

Pathological Anatomy. Hypertrophy of the inferior and middle turbinated bones; a peculiar hyperæsthesia of the mucous membrane covering the inferior and middle turbinated bones, the middle meatus, the floor of the nose and that part of the septum below the limit of the olfactory membrane are frequently associated with the disease.

Symptoms. Begins by severe *coryza*, with *sneezing*, a clear, watery, *nasal discharge*, congested eyes and Eustachian tubes, rapidly extending to the *larynx* and *bronchial tubes*, when occur a *hoarse*, *croupy* and wheezing *cough*, and *difficulty of breathing*. The dyspnœa occurs in paroxysms, which are often as severe as those occurring during a regular asthmatic attack.

The paroxysms remit after a few days, returning again for several days or weeks, and again remitting, the bronchial catarrh persisting for a month or more.

The constitutional symptoms are mild, unless complications occur.

Complications. The affection may extend to the finer bronchial tubes (capillary bronchitis); congestion or œdema of the lungs and pneumonia are not infrequent.

Duration. Unless a change of climate is resorted to, paroxysms of hay fever continue more or less severe for six, eight or ten weeks of the year; each year the paroxysms growing more severe.

Prognosis. The affection never proves fatal in itself, but one or more of the following *sequelæ* may result, to wit: Asthma, chronic bronchitis, or loss of the special sense of hearing or of smelling.

Treatment. No specific, unless the hypertrophy of the turbinated bones be a constant phenomena, when removal by the galvano-cautery would at once produce a cure.

An attack of hay asthma is often prevented by a *change of climate* during the season of the year when the attacks are most common, to wit: the *early autumn*. Any of the following locations may be selected, White Mountains, Catskills, Adirondacks, Rocky Mountains, or a sea voyage.

Attacks are sometimes aborted and always *relieved* by the application to the nares of tablets of *cocaine hydrochlorat* gr. $\frac{1}{6}$ every hour.

Success has followed the use of *quinina*, gr. v, three times a day, beginning one month before the expected paroxysm. After the attack has fairly begun, *potassii iodidum*, gr. xv, three times a day, seems to modify somewhat the severity of the paroxysms; or the following powder, by *insufflation* :—

R.	Bismuth. subnit.....	3 ij	
	Acid. tannic.....	3 j	
	Iodoformi.....	gr. xv.	M.

SIG.—Every three or four hours.

Prof. Bartholow "has seen several cases benefited greatly" by a solution of *quinina* applied to the nares, as suggested by Helmholtz; "but to achieve success the application must be thorough and timely."

The following applied thoroughly to the nostrils has a high repute:—

R. Menthol.....	ʒj	
Cerat. simpl.....	ʒij	
Ol. amygd. dulcis.....	ʒiiss	
Zinci oxidi puræ.....	ʒj	
Acid. carbolicæ.....	ʒss.	M.

SIG.—Apply every few hours.

Cases accompanied by a profuse watery discharge have this symptom at least modified by minute doses of *atropinæ sulph.*, with *morphinæ sulph.*, every three or four hours.

A long course of *arsenicum* in minute doses sometimes removes the susceptibility to the disease.

WHOOPIING COUGH.

Synonyms. Hooping cough; pertussis.

Definition. A convulsive, paroxysmal cough, consisting of a number of forcible expirations, followed by a series of deep, loud, sonorous inspirations (the whoop), repeated several times during each paroxysm, and associated with catarrh of the bronchial tubes.

Causes. Chiefly a disease of childhood, one attack generally removing the susceptibility; contagious; the result of an unknown poison, perhaps atmospheric, affecting the nervous system.

Pathology. The changes, if any, occurring in the nervous system are unknown. It is said that "irritation of the internal branch of the superior laryngeal nerve produces relaxation of the diaphragm, spasm of the glottis and a convulsive expiration, the series of phenomena present in a paroxysm of asthma."

Hyperæmia of the mucous membrane of the nares, pharynx, larynx and bronchial tubes, with diminished *secretion*, followed by an increased secretion of a transparent mucus, afterward becoming purulent, the mucous membrane pale and anæmic.

Symptoms. Divided into three stages, to wit: *catarrhal*, *spasmodic* and *terminal*.

Catarrhal stage originates as an ordinary naso-laryngo-bronchial catarrh with a loose cough. *Duration* one or two weeks.

Spasmodic stage: The cough becomes *paroxysmal*, consisting of a succession of *short, rapid, expiratory* efforts, the face becoming red, the eyes swollen and protruding, the body bending forward, and when these expiratory efforts have exhausted the breath, they are followed by a *deep, loud, crowing inspiration—the whoop*. Each paroxysm being composed of three such spells, the last one followed by the *expectoration* of a small amount of *tough, viscid mucus*.

The attacks of *cough* may be so severe as to cause *vomiting*, and if the vomiting occur shortly after food has been taken, the nutrition of the patient will suffer. Profuse *epistaxis* is not infrequent. *Duration* about four weeks.

Terminal stage. The paroxysms recur at longer intervals, are of shorter duration and less intensity, the catarrhal symptoms being more marked, the expectoration freer. *Duration*, one or two weeks, often followed by the “cough of habit.”

Complications. Congestion of the lungs, capillary bronchitis, pneumonia and emphysema, or, rarely, convulsions, hydrocephalus, or apoplexy.

Diagnosis. During the catarrhal stage, whooping cough cannot be distinguished from a common cold, but on the advent of the characteristic whoop the diagnosis is evident.

Prognosis. Depends upon the age and strength of the patient, the severity of the paroxysms, and the presence or absence of complications. Ordinary cases, favorable. Moderately severe attacks during infancy are followed by cerebral symptoms, while attacks occurring in adults are followed by chest symptoms.

Treatment. No specific. A self-limited disease. Remedies will not cure the disease, but often modify the severity of the symptoms.

Prof. Da Costa prefers *quinina sulph.*, in full doses, or *chloral* in good-sized doses, often advantageously combined with the *bromides*, and the use of a spray of *sodii bromidum*, gr. xx, and aquæ, fʒj, to which may be added *extractum belladonnæ fluidum*, ℥ij. A remedy of great utility is *ammonii bromidum*. The paroxysms are lessened in severity by the following:—

R.	Codeinæ sulph.....	gr. $\frac{1}{16}$ — $\frac{1}{12}$	
	Acid. hydrocyanici dilut.....	℥ $\frac{1}{2}$ —j	
	Syr. tolu.....	ʒj.	M.

SIG.—Every two or three hours.

Belladonna may be added to any of the remedies named with advantage.

The use of *cocaine* lozenges modifies the paroxysms in some cases.

Dr. Keating reports "remarkable improvement in four cases of whooping cough by the use, four or six times daily, of a spray composed of"—

R.	Ammonii bromid.,	
	Potassii bromid.....aa.....	℥j
	Tinct. belladonnæ.....	f℥j
	Glycerini	f℥j
	Aquæ rosæ.....q. s ad.....	f℥iv.

The diet of the patient must be regulated, the clothing to be warm but not too heavy, and the patient kept in the open air as long as possible.

HÆMOPTYSIS.

Synonyms. Bronchial hemorrhage; broncho-pulmonary hemorrhage; bronchorrhagia.

Definition. The expectoration of pure or unmixed blood, usually of a bright red color, following the act of coughing.

Causes. In the majority of cases, the result of *tubercular* deposition in the walls of the minute bronchial arteries; excessive cardiac action; bronchial congestion; excessive bodily exertion, straining, lifting or running; a symptom of *hæmophilia* ("bleeder's disease").

Pathological Anatomy. Hæmoptysis rarely causes death in itself, so that few opportunities for observing post-mortem appearances are obtained, and when they do occur, the location of the hemorrhage is seldom found.

The air passages are more or less filled with clotted blood, the mucous membrane is swollen, and of a dark red color, rarely, pale and bloodless. The air cells contain blood clots, or are distended with air, the bronchi being filled with clots preventing its escape. Unless the clots are rapidly removed by expectoration or absorption, a secondary inflammation originates around about them.

Symptoms. "Spitting of blood" occurs suddenly; rarely, it is preceded by epistaxis, cardiac palpitation and some difficulty of breathing.

It begins with a sensation of *warmth* under the sternum, *tickling* in the throat, a *sweetish taste* in the mouth, which, upon attempting to remove by the act of coughing, a *warm, saltish, bright red, frothy liquid* gushes from the mouth and nose. The quantity of blood raised

varies from an ounce to a pint. The appearance of the blood depresses the individual, he becoming *pale, tremulous, often fainting*.

The attack may subside within half an hour to several hours, returning for several days, in the meantime the expectoration being either bloody or streaked with blood.

A slight febrile reaction, with chest pains, supervenes upon the hæmorrhage, the result of the inflammation at the site of the bleeding, which soon subsides, except where blood clots develop a secondary pneumonia, which may undergo the cheesy metamorphosis.

Auscultation. *Coarse, bubbling râles* are discerned in circumscribed portions of the chest.

Diagnosis. From *epistaxis*, or hæmorrhage from the posterior nares, it is distinguished by the absence of air bubbles and an inspection of the fauces and the nasal cavities.

Hæmatemesis, or hæmorrhage from the stomach, differs from hæmoptysis in the blood being *vomited* instead of expectorated, of a *dark color, clotted*, mixed with the acid contents of the stomach, followed with black, tar-like stools, and *the absence of râles in the chest*.

Exceptions to the above occur when the blood from the lungs is first swallowed and afterwards raised by vomiting, or when the hæmorrhage in the stomach is caused by the erosion of a large artery, the result of ulcer of the stomach; in these cases, however, the raising of blood is preceded by epigastric pain and the blood is not frothy.

Prognosis. Hæmoptysis in itself rarely terminates fatally, although causing much depression; the patient rapidly recovers, unless secondary pneumonia results. In nine cases out of ten it is the prognostic sign of *phthisis*.

Treatment. *Perfect rest in bed*, the head and shoulders elevated, and perfect quiet, the diet to be bland, the drinks cool, the patient slowly swallowing small particles of ice. *Common salt*, slowly dissolved in the mouth, is a popular remedy, and if of no real benefit, serves to occupy the attention of the patient and friends until medical advice is obtained.

The hypodermatic injection of *ergotin*, gr. x-xxx, or the internal administration of *ext. ergotæ, fld.*, or,—

R.	Acid. gallic.....	gr. xv	
	Acid. sulph. dil.....	℥x	
	Aqua cinnamon.....	ʒiv.	M.

Repeated every fifteen or twenty minutes.

Or *tinctura matico*, ʒj, or *extractum hamamelis fld.*, ℥_{xx}-ʒj, or *alumen*, gr. xx, frequently repeated.

If the hemorrhage causes great nervous excitement, or depression, *opium*, either hypodermatically or internally, to quiet the patient, is indicated.

Inhalations, by means of the steam atomizer, of either *Monssel's solution* or *tinct. ferri chlor.*, are recommended when the above means fail.

Prof. Da Costa recommends, for frequent small hemorrhages, continuing day after day, *cupri sulph.*, gr. $\frac{1}{2}$, ext. *opii*, gr. $\frac{1}{2}$, p. r. n.

DISEASES OF THE LUNGS.

CONGESTION OF THE LUNGS.

Synonym. Hyperæmia of the lungs.

Definition. An increase in, or abnormal fullness of, the capillaries of the air cells; *active* when the result of an accelerated circulation; *passive* when caused by an impeded outflow from the capillaries.

Causes. *Active.* Increased cardiac action; over exertion; alcoholic excesses; mental excitement; inhalation of cold or hot air.

Passive. Obstruction to the return circulation. Dilated heart; valvular diseases; low fevers (hypostatic congestion); Bright's disease.

Pathology. The hyperæmic lung has a bloated, dark red appearance, its vessels are distended to the uttermost, the tissues succulent and relaxed, blood flowing freely over the cut surface; a bloody, frothy liquid is present in the bronchi, and the alveolar walls are so much swollen that the condensed lung shows scarcely any indication of its cellular structure, resembling the tissue of the spleen (*splenification*).

Symptoms. *Active.* Rapidly developing oppression of the chest and difficulty of breathing, flushed face, strong, full pulse, throbbing carotids and congested eyes, with a short, dry cough, followed by scanty, frothy expectoration slightly streaked with blood.

Passive. Developed slowly, with difficulty of breathing, blueness of the surface, almost continuous hacking cough, followed by scanty, blood-streaked expectoration.

Percussion. The resonance of the lungs slightly diminished, the quality of the sound being somewhat tympanitic.

Auscultation. The vesicular murmur is diminished and accompanied with *sub-crepitant râles*.

Duration. *Active.* Usually from three to five days, terminating either by resolution, hemorrhage, or, rarely, pneumonia. The onset may be so severe and sudden that death rapidly supervenes.

Passive. Developed slowly and subject to great variations, depending upon the cause.

Diagnosis. Active congestion of the lungs cannot be distinguished from the stage of engorgement of a true pneumonia, in the majority of cases.

Prognosis. An acute congestion of the lungs may prove fatal within a few hours, but under prompt treatment it generally terminates favorably.

The passive form is controlled entirely by the cause.

Treatment. *Active.* In the strong and vigorous *wet cups* to the chest, or, if the symptoms are pronounced, a general *venesection*. *Internally, tinctura aconiti*, gtt. j-ij every half hour or hour, as indicated, with *free purgation*.

Passive. *Dry or wet cups* over the chest, *hydragogue cathartics*, and the internal administration of *digitalis*.

ŒDEMA OF THE LUNGS.

Definition. An effusion of serum upon the free surface of the lung, to wit: in the pulmonary vesicles; characterized by dyspnœa, cough, and frothy, blood-streaked expectoration.

Causes. Increased cardiac action; over-exertion; alcoholic excesses; mental excitement; inhalation of cold and hot air.

Pathological Anatomy. The lung tissue is swollen, and does not collapse when the chest is opened. The elasticity of the tissue has disappeared, and it pits upon pressure.

If following congestion of the lungs, the color is red; if a symptom of a general dropsy, its color is pale.

On cutting into the œdematous spots an enormous quantity of

liquid, sometimes clear, at other times of a red color, mixed more or less with blood, flows over the cut surface. The liquid is filled with bubbles, is frothy, from being copiously mixed with air, providing the air cells have not been entirely filled with serum, thereby excluding the air.

Symptoms. Following a more or less rapidly developing hyperæmia of the lungs are *great difficulty* and *extreme rapidity of breathing*, with a strong sense of *oppression*, *great anxiety*, *rapid* and tumultuous *cardiac action*, *throbbing carotids* and *temporals*, fullness of the head and *headache*, *flushed face* and *congested eyes*, with a *constant, short cough*, and the *expectoration* of a *tough, frothy mucus*, streaked with *blood*.

If the effusion into the air cells be sufficient to prevent the entrance of air, symptoms of *cyanosis* rapidly supervene, the *pulse* becoming *feeble*, the *surface cold*, the *breathing shallow* and hurried, the *cough suppressed*, *stupor* replacing the restlessness, soon deepening into *coma*.

Percussion. Slightly impaired or vesiculo-tympanitic.

Auscultation. The vesicular murmur is supplanted by *sub-crepitant* and *bubbling râles*.

Diagnosis. *Pneumonia* in the earlier stages is the only condition likely to be confounded with œdema of the lungs, and the subsequent course of the two maladies soon determines the diagnosis.

Prognosis. Œdema of the lungs is always a serious malady, and frequently, unless promptly relieved, terminates fatally.

Treatment. If the œdema be of an active kind, prompt *blood-letting*, either by *venesection* or *wet cups* to the chest, is indicated.

The *internal* administration of *tinctura aconiti*, gtt. j-ij, repeated every fifteen minutes, until the cardiac action is markedly reduced, after which every hour or two, with the use of the preparations of *ammonium*, either the *carbonas* or *iodidum*, to liquefy the effusion, produce marked relief.

The above means may be aided by *counter-irritation* to the chest, *hot mustard foot-baths*, and active *saline purgatives*.

CROUPOUS PNEUMONIA.

Synonyms. Lobar pneumonia; pneumonitis; pleuro-pneumonia; lung fever; winter fever.

Definition. An acute croupous inflammation involving the vesicular structure of the lungs, rendering the alveoli impervious to air;

characterized by a severe chill, fever, pain, dyspnœa, cough, rusty sputum and great prostration.

Causes. The question of pneumonia being a constitutional disease is still *sub judice*. It is most common in winter, at times occurring *epidemically*, the result of atmospheric conditions; exposure to draughts and cold; injuries to the chest walls; alcoholic excesses; gout or rheumatism.

Pathological Anatomy. The inflammatory changes most commonly affect the lower right lobe, rarely the upper lobe, very rarely corresponding lobes in both lungs.

The changes are, I. *Hyperæmia* (engorgement); II. *Exudation* (red hepatization); III. *Resolution* (gray hepatization); or it may undergo purulent transformation or the development of abscesses (yellow hepatization).

I. *Stage of hyperæmia* or engorgement consists in the vessels of the alveoli being distended to their utmost, encroaching upon the cavity of the air vesicle; the lung has a reddish-brown color, is heavier, sinking somewhat lower in water than a normal lung, and having a slight exudation upon the vesicular surface. The same changes are perceived in the adjacent bronchioles.

II. *Stage of exudation*, consists in the exudation of a viscid, fibrinous fluid, admixed with white and red corpuscles and blood, which rapidly coagulates, firmly enclosing the corpuscles and completely filling the alveoli. When the exudation and coagulation are completed, the lung is red, sinks at once when placed in water, and its elasticity is destroyed. When cut into, the color, density and granular appearance so closely resembles the cut surface of a section of the liver, that Lænnec termed it *red hepatization*.

III. *Resolution*, or gray hepatization, follows the above condition in the majority of cases, the coagulated albuminous exudation undergoing liquefaction and absorption, the cellular element undergoing a fatty degeneration, the greater part being absorbed, the remainder expelled during acts of expectoration, the alveoli returning to their normal condition, both as to capacity, function and elasticity.

If resolution be retarded and portions of the coagulated exudation undergo *purulent transformation*, changing from a yellowish to a greenish-yellow color (yellow hepatization), pus cells are rapidly formed, the part becoming a granular, fatty mass. The portions of the lung not undergoing this purulent transformation retain the red-

dish color with intermixed yellowish patches, the lung structure proper remaining intact. The purulent contents may be ejected in part, the remainder undergoing fatty degeneration and finally absorption.

Abscess of the lung may result from the lung structure becoming involved in the purulent disintegration. Abscesses may be solitary or in great numbers, which by disintegration of intervening structure form one or more large abscesses; these abscesses either terminate fatally, or open into the pleural cavity, causing *empyema* and exhaustion, or open into the bronchi and are expectorated, or an *interstitial pneumonia* is developed and the abscess encapsulated in a firm cicatricial tissue.

Gangrene of the lungs may result from blocking up of the bronchial or pulmonary arteries by coagula, during any stage of the disease.

The uninflamed portions of the lungs are hyperæmic and their functional activity is increased.

Death sometimes results from a *general œdema* of the unaffected lung, such cases being often erroneously termed "double pneumonia."

If inflammation of the *pleura* be associated with a pneumonia, the so-called *pleuro-pneumonia*, the changes in the pulmonary pleura are characteristic. "An uneven, thin, downy-looking layer of plastic exudation covers its surface. This plastic layer may conceal the liver-brown color of the pneumonic lung. As the third stage is reached the opposing surfaces of the pleura may become agglutinated. The pleuritic changes follow very closely those which occur within the lung. The cells in the pleuritic exudation are mainly pus. The pleuritic membrane is opaque, congested and ecchymotic. It may become so thick as to give a dull note on percussion, after resolution is reached."

Duration of Stages: *stage of congestion*, from one to three days; *stage of exudation*, from three to seven days; *stage of resolution*, from one to three weeks.

In severe cases or in the very young, the aged or the depressed, the stage of red hepatization may be fully developed within forty-eight hours.

Seat: The most frequent seat of croupous pneumonia is the lower *right* lobe; the next most frequent seat is the lower *left* lobe; the next, the upper right lobe, although in children and the aged this lobe is affected equally as often as the right lower lobe.

Symptoms. Begins with a severe and unusually protracted *chill*

(in children often convulsions), followed by a rapid *rise of temperature*, 103° – 104° F., a strong, full, but *rapid pulse*, either a *dull or sharp pain* near the nipple, aggravated by pressure, breathing or coughing, *shortness of breath*, the number of respirations increasing to 40, 50 or more per minute, causing *interrupted speech*; *cough*, first short, ringing and harsh, soon followed by a scanty, frothy mucus, soon becoming semi-transparent, viscid, and *tenacious*, about the second day changing to the familiar *rusty sputum*, becoming more copious and of a yellow color as the disease advances. There are present headache, sleeplessness, rarely delirium, save in drunkards, flushed countenance, and especially over the malar bones is a well-defined mahogany blush; gastric disturbances and scanty, high-colored urine, with *diminished chlorides*.

The above symptoms continue more or less marked until either the *fifth, seventh, ninth or eleventh day*, when a *crisis* occurs, and within twenty-four hours convalescence is established, recovery rapidly following.

Typhoid pneumonia is a term applied to those cases which are accompanied by signs of *extreme prostration*, very *high temperature* and profuse and *prolonged exudation*. They may also terminate by a *crisis*.

Bilious pneumonia occurs in cases accompanied by *congestion of the liver*, the result of venous stasis from pulmonary obstruction or from an accompanying *acute catarrhal jaundice*. In malarial districts pneumonia and malaria are often associated, when jaundice, more or less pronounced, occurs. Such cases are termed *malarial or intermittent pneumonia*.

If *purulent infiltration* follow the stage of red hepatization, instead of a crisis, symptoms of exhaustion occur, with profuse purulent expectoration, high temperature, severe sweats; the tongue brown and dry, sordes collecting on the teeth, recovery slow and convalescence tedious.

Pneumonia occurring in persons of *intemperate* habits usually begins with symptoms closely resembling an attack of *delirium tremens*, cough, expectoration, the pain very slight, or even absent.

Inspection. *First stage*, deficient movement of the affected side, due to the pain.

Second stage, the healthy side rises normally, the affected side lagging behind. If both lower lobes are impervious to air, the diaphragm

cannot descend and the epigastrium does not project during inspiration, the breathing being conducted by the upper part of the chest (superior costal respiration).

Palpation. *First stage*, the *vocal fremitus* more distinct than normal.

Second stage, the vocal fremitus is markedly *exaggerated*, except in those rare instances of occlusion of the bronchi by secretion.

The *cardiac impulse* is felt in the normal position.

Percussion. *First stage*, the percussion note is slightly *impaired*; indeed, at times having a hollow or tympanitic quality.

Second stage, *dullness* over the affected parts, with an increased sense of *resistance*.

Auscultation. *First stage*, over affected part, *feeble vesicular murmur*, associated with the true vesicular or *crepitant* (crackling) *râle*, most distinct during inspiration.

Second stage, harsh, high pitched *bronchial respiration*, at times resembling a to and fro metallic sound, except in those rare instances in which the bronchi are more or less filled with secretion.

Bronchophony, or distinctly transmitted voice, at times *pectoriloquy*, or distinct transmission of articulated sounds.

Third stage, breathing changing from bronchial to *vesiculo-bronchial*, the *crepitant* (crepitatio redux) *râle* returning, and if resolution proceed, the breath sounds are associated with *large* and *small moist* and bubbling *râles*.

Terminations. Asthenic cases recover within two weeks. When purulent infiltration supervenes, the disease pursues a tedious course of several weeks' duration, with a low exhaustive fever.

If death occur during the first or second stages it is usually the result of a *collateral œdema* of the uninflamed lung, or *cardiac exhaustion*.

If *abscesses* occur, there are exhausting sweats, frequent cough, with a large amount of yellowish-gray, at times blood-streaked, expectoration.

Gangrene of the lungs is a rare termination; it is associated with symptoms of collapse, the expectoration of a blackish, fetid sputum, and the physical signs of a pulmonary cavity.

Diagnosis. *Edema of the lungs* may be confounded with the first stage of pneumonia, but the subsequent history, its presence on both sides, and the waterish expectoration and absence of chill and

pain and the physical signs of pneumonia soon determine the diagnosis.

Pleurisy is oftener confounded with pneumonia than any other disease, the points of distinction between which will be pointed out when discussing that affection.

Prognosis. Depends upon the extent of the inflammation, double pneumonia being very grave, but is not near so frequent as was at one time supposed. A temperature of 105° F., and a pulse above 120 are of bad omen. Pneumonia of drunkards almost invariably terminates fatally. Typhoid pneumonia, the so-called bilious pneumonia, purulent infiltration, abscesses of the lungs and gangrene, all give a grave prognosis.

Treatment. *First stage*, wet or dry cups over the chest, followed by the application of poultices. Internally, either *tinct. verat. virid.*, gtt. j-ij, or *tinct. aconiti*, gtt. ij-iv, or *tinctura digitalis* ℥x, repeated every half hour or hour, until a decided impression is made upon the circulation, and at the same time *quininæ sulphas*, gr. v, every three or four hours. If the patient be strong and vigorous, the circulation full, the arterial tension high, the dyspnœa early and marked, the surface flushed, and the pain severe, marked relief is obtained by a good *venesection*.

Second stage, the arterial sedative should be replaced by *quininæ sulphas*, gr. ij, every three hours, and *ammonii carbonas*, gr. v, every two hours, and a good, nutritious diet. Local applications are useless at this stage.

Third stage, *ammonii carbonas*, gr. v, every three hours, *quininæ sulphas*, gr. xij-xx, during the day, *nutritious diet*, *stimulants*, and if the hepatization shows signs of lingering, *flying blisters* over the chest.

For typhoid pneumonia, purulent infiltration, abscess of the lungs, or pneumonia in drunkards, the weak or aged, *quinina*, *ferrum*, strong, *nourishing diet*, bold *stimulation*, and the free use of *ammonii carbonas*, are the indications.

CATARRHAL PNEUMONIA.

Synonyms. Broncho-pneumonia ; lobular pneumonia ; capillary bronchitis (?)

Definition. An acute catarrhal inflammation of the bronchioles

and alveoli of the lungs characterized by fever, cough, dyspnœa, copious expectoration and great depression.

Causes. From an extension of a bronchial catarrh downward ; following the eruptive fevers, especially measles ; complicating whooping cough. Persons of the rickety or scrofulous diathesis, in whom there is a greater irritability of the epithelial elements, are particularly predisposed to this form of pneumonia on slight exposure ; emphysema ; diseases of the heart ; childhood and old age.

Pathological Anatomy. *Hyperæmia* of the mucous membrane of the bronchi, and also of the bronchioles and air cells, with *swelling* and *succulence* of these tissues, accompanied by an *abnormal secretion* and an immense *production of young cells* from the proliferation of the bronchial and alveolar epithelium, admixed with a yellowish, creamy, mucoid material, which blocks up the bronchioles and air cells.

The affected parts first have a reddish-gray, soon changing to a yellowish-gray color, due to the rapid metamorphosis of the newly developed cells. If the fatty change be completed, absorption takes place, and the consolidation is removed ; if it remain incomplete the cells atrophy, the little mass becoming caseous, and the disease passes into a chronic state.

The bronchial tubes also participate in the disease, the walls become thickened, from a hyperplasia of the connective tissue (*peri-bronchitis*), and their calibre is often dilated.

Symptoms. Catarrhal pneumonia is preceded by catarrhal bronchitis. It may be either *acute*, *sub-acute* or *chronic* in its course.

Acute variety : Its onset is announced by a gradual *rise of temperature* to 102°–103° F., with *rapid*, laborious and shallow *breathing*, as shown by the widely dilated nares and violent action of all the accessory muscles, while the insufficient distention of the lungs is shown by the great recession of the lower part of the chest walls and sinking in of the intercostal spaces. The *inspiration* is short and imperfect, the *expiration* noisy and prolonged ; the *pulse* is *frequent*, 100–120 or more, and somewhat compressible ; the *cough*, which, during the bronchitis, was loose, now becomes *short*, *hacking*, dry and *painful*, soon followed by more or less copious *muco-purulent expectoration* ; the appetite is impaired, *bowels* somewhat *loose*, urine scanty, high-colored, and the surface frequently covered with a more or less *profuse perspiration*.

The *sub-acute* and *chronic* varieties have the same general symptoms, but the duration is longer and the exhaustion greater.

The progress of catarrhal pneumonia is sometimes, although not often, a very acute one. The disease may prove fatal in a few days, especially if it attack feeble children; in such the countenance becomes pale and livid, the lips bluish, the eyes dull, and restlessness giving place to apathy and a continually augmented somnolence.

Resolution, when it occurs, is by *lysis*, several weeks elapsing before complete recovery.

Percussion. *Dullness*, scattered in patches, over both lungs, the intervening healthy lung often giving a more or less *hollow* or *tympanitic* note.

Auscultation. *Vesiculo-bronchial* breathing, changing to moist bronchial breathing, associated with *small bubbling* (sub-crepitant) *râles*. As the disease progresses toward resolution, the *râles* become larger (large bubbling) and more copious. If pneumonic phthisis result, physical signs indicative of that condition are soon evident.

Sequelæ. Attacks of catarrhal pneumonia complicated with atelectasis, or collapse of the lobules, when recovery occurs, are followed by emphysema of the lungs.

If the catarrhal products which fill the alveoli and bronchioles and intervening connective tissue do not rapidly undergo complete fatty metamorphosis and consequent absorption, *pneumonic phthisis* results.

Diagnosis. *Ordinary bronchial catarrh* differs from catarrhal pneumonia by the absence of dyspnœa, fever, and dullness on percussion, and the presence of the large bubbling *râles*, and also by the subsequent history of the two affections.

Croupous pneumonia is a unilateral disease; catarrhal pneumonia is bilateral and diffused over both lungs; the former a self-limited disease, the latter having no fixed duration.

Acute tuberculosis at its onset is characterized by the presence of a capillary bronchitis, a differentiation being possible only by a study of clinical history and course of the two maladies.

Edema of the lungs is a bilateral disease associated with a short, dry cough and dyspnœa, but lacks the previous catarrhal history and high temperature of catarrhal pneumonia.

Prognosis. Fully one-half of the cases of true catarrhal pneumonia terminate fatally. The prognosis must be guarded in scrofu-

lous or rachitic subjects, or those enfeebled by other diseases, for, unless prompt resolution can be effected, it will terminate fatally early, or develop pneumonic phthisis.

Treatment. Confinement to bed is paramount, although the position of the patient is to be frequently changed. The *diet* must be of the most nutritious character, administered at frequent intervals; milk, eggs, chicken, beef, mutton and oyster broths are the most suitable. The steady use of *brandy* or *whisky* throughout the attack is of importance; regulating the amount by the age of the patient and the severity of the attack.

For the *fever*, *quininæ sulphas*, gr. xv–xx each day, is the most reliable of all antipyretics, or *antipyrin* in full doses may be substituted.

For the *catarrhal process*, the air of the apartment should be maintained at an even temperature and moistened by disengaging the vapor of water in it. The following combination is of great utility in nearly all cases:—

R.	Ammonii carbonat.....	gr. v	
	Ammonii iodidi.....	gr. v–x	
	Mucil. acaciæ.....	q. s.	
	Syr. glycyrrh.	℥ i–ij	
	Syr. prun. virg.....	q. s. ad	℥ ij–iv. M.

SIG.—Every three hours.

A much pleasanter way of administering the *ammonia* salts is in capsules, each containing about two and one-half grains of each salt with an aromatic oil.

For *convalescence*, nutritious food, *ferri iodidum*, *quininæ sulphas*, and *oleum morrhuæ*.

Locally: repeated application of mustard poultices or turpentine stupes followed by demulcent poultices. If the inflammatory process tends to become chronic, scattering blisters should be used.

PULMONARY CONSUMPTION.

Synonyms. Phthisis pulmonalis; phthisis; consumption.

Definition. Four varieties of pulmonary consumption are now admitted to exist: Pneumonic phthisis; tubercular phthisis; fibroid phthisis; acute miliary tuberculosis.

As these forms present differences at all points, they will be described separately.

PNEUMONIC PHTHISIS.

Synonyms. Chronic catarrhal pneumonia ; catarrhal phthisis ; caseous pneumonia ; caseous phthisis.

Definition. A form of destruction of the pulmonary tissue caused by the *caseation* or cheesy degeneration of inflammatory products in the lungs and the subsequent softening and destruction of the caseous matter, with greater or less destruction of the pulmonary tissue ; characterized by hectic fever, cough, shortness of breath, purulent expectoration, and more or less rapid prostration.

Causes. The *predisposing* factor in the etiology of pneumonic phthisis is a strumous or scrofulous diathesis, or a condition of lowered health, the result of various unfavorable hygienic influences.

The *exciting* causes are catarrhal pneumonia in any portion of the lung, but especially at the *apex* ; inflammation occurring about a blood clot ; inhalation of irritant particles occurring in certain occupations, to wit : weaving, grinding, mining, hatters, millers, cigar makers and the like.

Pathological Anatomy. When a pneumonia terminates in resolution the inflammatory products are absorbed by first undergoing a *fatty metamorphosis*. If the fatty metamorphosis be incomplete, the cells are atrophied and undergo the *caseous degeneration*, which consists in the absorption of the watery parts and the fatty degeneration of the cellular elements and the granular disintegration of the fibrinous material, so that ultimately a soft, solid mass is produced, yellowish in color, having the appearance of cheese.

The destructive changes are thus described by Niemeyer : " Cells, the products of inflammation, accumulate in the alveoli and minute bronchi, crowd upon each other, becoming densely packed, and thus by their mutual pressure they bring about their own decay, as well as that of the lung textures, by interfering with their nutrition, the alveolar walls being also themselves damaged by the inflammatory process."

The position of the catarrhal pneumonia resulting in the above changes is usually at the apex, but it may occur at any portion of the lungs, or a whole lung becomes infiltrated, and undergoes the cheesy degeneration (phthisis florida).

In many cases *tubercle* is deposited in the inflamed lung, hastening its destruction and the formation of cavities.

Symptoms. Pneumonic phthisis occurs in three forms, to wit : *chronic*, *sub-acute* and *acute*.

Chronic form. The origin is rather insidious, the individual being susceptible to "colds" on the slightest exposure; gradually a *persistent cough*, with the *expectoration of muco-pus*, is established, each severe cold being accompanied with *chill, fever, pain* in the chest, and either slight *hemorrhage* or *blood-streaked sputa*. Finally the attacks become persistent, with morning *chills*, evening *fevers* and rather profuse *night sweats*, distressing cough, profuse muco-purulent sputa, great weakness and exhaustion, loss of appetite and feeble digestion, the symptoms growing persistently worse, *death* occurring from *exhaustion* after one or two years' duration.

Sub-acute variety. History of an acute attack of pneumonia of one or two weeks' duration, followed by a decided improvement, but not complete recovery. After a lapse of some weeks or months, symptoms of pulmonary *softening* begin, destroying the lung structure and forming cavities, accompanied by *chills, fever, night sweats, emaciation, cough, muco-purulent* and *blood-streaked expectoration*, the patient dying from exhaustion within a year.

Acute variety, the so-called *phthisis florida*, runs a rapid course, beginning as a catarrhal pneumonia, involving the whole of one or part of both lungs, associated with rapid *loss of flesh* and strength, *high* but variable *temperature*, 103° – 105° F., with remissions, profuse *night sweats, shortness of breath*, severe cough, *profuse*, purulent and *blood-streaked sputa, loss of appetite, feeble digestion, rapid emaciation*, the patient succumbing in a few weeks or months, from exhaustion.

A decided remission in the local and general symptoms of the acute variety may occur, the disease afterward pursuing a more chronic course.

Inspection. Shows *deficient* respiratory *movements* of the diseased portion of the lungs.

Palpation. *Increased vocal fremitus* over the consolidated lung tissue and cavities.

Percussion. The percussion note varies from a slight *impairment* of the normal note to *dullness*, and when cavities are formed, associated with scattered points of the *tympanitic* or *hollow* note. If the cavities communicate with a bronchial tube the *cracked-pot* or *cracked-metal* sound is elicited. If the cavities are filled with pus the percussion note is *dull*. If the pus be expelled, the tympanitic or cracked-pot sound returns.

Auscultation. The vesicular murmur is unimpaired in those

parts free from disease: it is *feeble* or indistinct if many bronchioles are obstructed; and is harsh or *blowing* if the bronchioles are narrowed. The *inspiratory* sound will be *jerking*, and the *expiratory* sound *prolonged* and *blowing* when the lung has lost its elasticity.

Associated with the impaired vesicular murmur is a *fine, dry, crackling sound* (crepitation), appearing at the *end of inspiration*. If bronchitis be associated, large and small *moist or bubbling râles* are heard during the respiration.

When cavities form, either *bronchial* or *broncho-cavernous* respiration is heard, associated with more or less distinct *gurgling râles*. If the cavity be free from pus and have rather firm walls, the breathing is more *amphoric* in character.

Diagnosis. *Catarrhal bronchitis* has many points of resemblance to pneumonic phthisis. The subsequent course of the latter, with the high temperature, prostration, emaciation, and physical signs, should prevent error.

Tubercular phthisis is often confounded with pneumonic phthisis, an error difficult to prevent in many cases.

Prognosis. *Acute* variety, the phthisis florida, usually terminates fatally within a few months.

The *sub-acute* and *chronic* varieties may, under judicious treatment and favorable hygienic conditions, be arrested, the caseous matter partly expectorated and partly absorbed, leaving more or less loss of structure, cicatricial tissue supplying its place, which after a time contracts, causing more or less retraction of the chest walls.

Cases not properly treated, either from carelessness or poverty, succumb after a year or two.

Treatment. An attempt should always be made to remove the caseous matter by absorption and expectoration. The following prescriptions will sometimes prove successful:—

R.	Ammon. carb.....	gr. v	
	Ammon. iodidi.....	gr. v-x	
	Syr. tolu.....	℥ ij	
	Syr. prun. virg.....	℥ ij.	M.
Every five hours, alternating with			

R.	Liq. potass. arsenitis.....	℥ v	
	Mass. ferri carb.....	gr. v	
	Vini xerici.....	℥ j	
	Aquæ dest.....	q. s. ad f ℥ ss.	M.

The diet should be of the most nutritious character, the clothing warm, and, if practicable, change of residence should be made to a dry and elevated climate. If the digestion will permit, *oleum morrhue*, ʒ i-ij, three times a day.

For the *fever*, *quininæ sulphas*, gr. xv-xx, is more successful than the combination of quina and digitalis in small doses.

Night sweats are best controlled by *atropinæ sulphas*, gr. $\frac{1}{80}$, at bedtime, or

R.	Extract. belladonnæ.....	gr. ss	
	Zinci oxidi.....	gr. iij.	M.
At bedtime.			

For the *cough* and *sleeplessness*, *codeinæ sulphas*, gr. ss-j, p. r. n.

TUBERCULAR PHTHISIS.

Synonyms. Tuberculosis ; consumption ; incipient phthisis.

Definition. The deposition of tubercle in the lung structure, which undergoes softening, followed by more or less loss of the pulmonary tissue proper ; characterized by fever, cough, dyspnœa, emaciation and exhaustion.

Causes. Chiefly hereditary ; closely associated with scrofula and struma ; probably contagious under certain conditions ; secondary to catarrhal (caseous) pneumonia ; the theory of the "*bacillus tuberculosis*" of Koch is still *sub judice*.

Pathological Anatomy. Tubercle is a grayish-white, translucent and semi-solid granulation, about the size of a millet seed, most commonly deposited in the walls of the bronchioles, exciting a low form of inflammation, the result of its own death. The masses of tubercle soon undergo softening (cheesy transformation) ; the lung structure is secondarily affected, undergoes softening, which results in more or less destruction of the tissue, whence cavities are formed.

The inflammation may extend to the small arteries, causing hemorrhage.

The deposit of tubercle is generally at one of the apices, soon spreading to other parts ; depositions may also occur in the brain, intestines and liver.

The pleura is usually the seat of a chronic inflammation (dry pleurisy), resulting in the obliteration of the pleural cavity.

Symptoms. The symptoms correspond closely to the stages of *deposition*, of *softening*, and of the *formation of cavities*.

The development is *insidious*, with increasing *dyspepsia*, *irritable heart*, a light, dry, hacking *cough*, referred to the throat or stomach, scanty, glairy *expectoration*, gradual *loss of weight*, impaired muscular *strength*, *pallid appearance*, more or less copious *hæmoptysis* often following. *Pain*, sharp in character, below the clavicles, is often present.

The *beginning of softening* is announced by increased *cough*, freer *expectoration*, *dyspnœa* increased on exertion, morning *chills*, evening *fever*, *night sweats*—the so-called hectic fever, *diarrhœa*, increased *emaciation* and *weakness*, the patient, however, continuing very hopeful.

With the *formation of the cavities*, the *cough* is more aggravated, with profuse and purulent *expectoration*, at times containing yellow *striæ*, the amount depending upon the number and size of the cavities; *hæmoptysis* not common at this stage; the *pulse* rapid and weak, *increased hectic*, burning of the soles and palms, copious *night sweats*, greater debility and *emaciation*, with *œdema* of the feet and ankles, denoting failure of the circulation, death soon following from *asthenia*, the mind clear and hopeful to the end.

Inspection. *First stage*, often shows slight *depressions* in the supra-clavicular, and at times in the infra-clavicular regions.

Palpation. *Second stage*, the vocal *fremitus* is slightly *increased*.

Percussion. *First stage*, *slight impairment* of the normal percussion resonance can sometimes be elicited. *Second stage*, the resonance is *impaired*, and may be even *dull*. *Third stage*, *dullness* with circumscribed spots of the *amphoric*, or *tympanitic* or *cracked-pot* sound.

Auscultation. *First stage*, *inspiration jerky*, *expiration prolonged*, the pitch higher than normal, the inspiration associated with *crackling râles*.

Second stage, *vesiculo-bronchial* breathing, associated with *sub-crepitant* and large and moist or *bubbling râles*.

Third stage, *bronchial*, *broncho-cavernous* and *cavernous respiration*, associated with large and small moist or *bubbling*, and localized *gurgling râles*.

Bronchophony in its various degrees is associated with the second and third stages of tuberculosis.

Complications. Tubercular diseases of the brain, larynx, pleura, intestines and peritoneum ; perineal abscess leading to fistula.

Diagnosis. The early diagnosis of tubercular phthisis rests mainly on the history, together with the symptoms and physical signs. In the first stage it is often mistaken for dyspepsia, anæmia, malarial fever, or disease of the heart.

Prognosis. In the main unfavorable, although under proper treatment, change of climate and like favorable conditions, life may be prolonged for years. The question of perfect recovery is, to say the least, doubtful.

Treatment. *First stage*, life may be prolonged, and perhaps the further deposition of tubercle delayed, by a change of climate, nutritious food, warm clothing, out-door exercise, and the internal administration of *ol. morrhuae, ferri iodidum, arsenicum, hypophosphites*, or *the elixir quininae ferri et strychninae*.

Great improvement in the symptoms of phthisis follow the *rectal injection* of *sulphuretted hydrogen* after the manner suggested by M. Bergeon, of Paris, but that recovery will occur is hardly probable.

Dr. H. C. Wood suggests the administration of the remedy by the stomach, claiming as great success by that means as when administered per rectum. To cover the disagreeable taste of the remedy he uses a *saturated solution* of the sulphuretted hydrogen, using : " At first a half ounce, afterwards an ounce, of the saturated solution of the sulphuretted hydrogen should be placed in a tumbler, and two or three ounces of carbonic acid water be run into it from a highly-charged siphon, the whole being drunk while effervescing. This may be given three to five times a day, so that the patient will receive daily between a half-pint and a pint of the sulphuretted hydrogen gas."

Special symptoms require treatment only when indicated, care being exercised to avoid everything which tends to impair the appetite, disorder digestion, or lower the vital powers.

For the *fever* the "Niemeyer pill" is usually recommended ; its formula being—

Rx.	Quininae sulph.....	gr. ij	
	Pulv. digitalis.....	gr. ss-j	
	Pulv. opii.....	gr. $\frac{1}{4}$ -ss	
	Pulv. ipecac.....	gr. $\frac{1}{20}$	M.

From a very considerable experience with this "famous" pill, I

can recall few cases in which it has proven of the least benefit. The following is much more effectual :—

R.	Quininæ sulph.....	gr. x	
	Quininæ muriat.....	gr. x	
	Pulv. opii & ipecac.....	gr. iij.	M.
	Ft. capsul No. ij.		

SIG.—One capsule five hours, and the other three hours before the decided rise of temperature.

For *night sweats*, not the result of the diurnal fever, *atropinæ sulphas*, gr. $\frac{1}{80}$ — $\frac{1}{60}$, at bedtime, is an effective agent.

For *cough*, if not modified by the arrest of temperature and night sweats, the following is of use :—

R.	Codeinæ sulphat.....	gr. $\frac{1}{3}$ — $\frac{1}{2}$	
	Acid. hydrocyanici dil.	℥ij	
	Syr. tolu.....	℥j.	M.

SIG.—Several times a day.

The *dyspeptic* symptoms are wonderfully relieved by the following :—

R.	Pepsini cryst.....	gr. ij	
	Acid. muriat. dil.....	℥x	
	Glycerini.....	℥xx	
	Succi limonis.....	℥xv	
	Aquæ aurantii flor. ad.....	℥ij.	M.

SIG.—With meals.

FIBROID PHTHISIS.

Synonyms. Chronic interstitial pneumonia; cirrhosis of the lungs; Corrigan's disease.

Definition. A hyperplasia (thickening) of the pulmonary connective tissue, resulting in atrophy and degeneration of the vesicular structure, associated with bronchial inflammation; characterized by cough, profuse expectoration, fever, emaciation, and ultimately death by asthenia.

Causes. Hereditary; inhalation of irritants; chronic bronchitis; alcoholism.

Pathological Anatomy. Thickening of the bronchial mucous membrane and dilatation of the air tubes; hyperplasia of the pulmonary connective tissue, resulting in the compression and consequent destruction of the vesicular structure, which is assisted by the contraction of the newly formed tissues. Sooner or later catarrhal pneu-

monia results, the product undergoing the cheesy degeneration, cavities being formed, and as a result of the long-continued suppuration, tubercular depositions occur, hastening the destruction of the lung tissue.

Prof. Da Costa has reported a number of cases of "grinder's phthisis" in whose sputum was found the "bacillus tuberculosis" in whose family history there were no traces of consumption.

Symptoms. The course is chronic, beginning as a *bronchial catarrh*, worse in winter, better in summer, when, after several years, the *cough* becomes more *continuous*, the *expectoration* freer, and muco-purulent, often raised in paroxysms, in large amounts, *hectic fever* develops, *night sweats*, *dyspnœa* and rapid *emaciation*, soon followed by *œdema* of the feet and ankles, the result of failing circulation, death occurring by *asthenia*.

Inspection. Depression of the chest walls.

Percussion. *Impaired* resonance, followed by *dullness*, with irregular spots of amphoric or *tympanitic* percussion note over the points of depression.

Auscultation. *First stage*, *vesiculo-bronchial*, or harsh respiration associated with large and small moist or *bubbling râles*, followed by *bronchial*, *broncho-cavernous* and *cavernous* respiration, with circumscribed *gurgling râles*.

Diagnosis. Beginning as a bronchial catarrh, slowly progressing, with the remission of the symptoms during the summer months, finally becoming progressively worse, with the formation of cavities, and symptoms of *asthenia*, are the chief points in the diagnosis.

Prognosis. The duration of fibroid phthisis is most protracted, six or twelve years being the average duration; death, however, is the inevitable termination.

Prof. Da Costa has records of one hundred deaths from "grinder's consumption" whose average life was twelve years.

Treatment. To prevent the hyperplasia of the connective tissue, *hydrargyri corrosivum chloridum*, *potassii iodidum* or *aurii et sodii chloridum*, are recommended. *Oleum morrhuæ* is of benefit.

The *bronchial catarrh*, *hectic fever* and *night sweats* should be treated only when their severity becomes marked.

ACUTE PHTHISIS.

Synonyms. Acute miliary tuberculosis; galloping consumption.

Definition. An acute febrile affection, due to the rapid deposition throughout the body, but especially in the lungs, of the gray tubercle-granule: characterized by high fever, cough, profuse expectoration and rapid prostration.

Causes. Most common between puberty and middle life.

"That the gray granulation is deposited throughout the body under the influence of certain conditions of irritation, it is necessary that a peculiar vulnerability of the constitution exist, in other words, that it be of the scrofulous type."

The result of caseous or suppurative changes in the lungs.

Pathological Anatomy. "The gray granulation or miliary tubercle consists of a fine reticulation of fibres, with a mass of epithelioid cells and granules, and often having a giant cell for its centre."

The deposit is generally over both lungs and the bronchial tubes, and is followed by hyperæmia, increase of secretion, having a viscid and adhesive character, and the destruction of all the tissue with which it comes in contact.

Deposits also take place in the brain, pleura, intestines, peritoneum and kidneys.

Symptoms. The onset is usually sudden, with a *chill* or *chilliness*, followed by *fever*, 102°–104° F., *rapid*, dicrotic *pulse*, 120–140, *cough*, with scanty, glairy sputum, *increased respiration*, 30–50 per minute, *pain* in the chest, hot skin, dry tongue, deranged digestion and *great prostration*, the severity of the symptoms rapidly increasing, the sputum becoming more abundant and often rusty in color, with more or less frequent attacks of *hæmoptysis*, soon followed by headache, vertigo, sleeplessness, often delirium, coma and death.

If deposits have occurred in the meninges or the intestines, symptoms of these affections are superadded.

Percussion. The percussion resonance is normal until considerable deposits have occurred, when it is either slightly *impaired* or even slightly *tympanitic*. With the development of cavities the *amphoric* percussion note is present.

Auscultation. *Vesiculo-bronchial* breathing, associated with large and small, moist or *bubbling râles*, soon followed by *bronchial*

and *broncho-cavernous* breathing, with large and small, moist and circumscribed *gurgling* râles.

Duration. Acute phthisis terminates fatally in from four to twelve weeks.

Diagnosis. Commonly mistaken for typhoid fever with lung complications, an error that is readily made unless a close study of the history, symptoms and physical signs be made.

Treatment. There are no means of retarding the progress of this malady. The various symptoms should be met as they occur, the patient at the same time being supplied with large quantities of *stimulants*.

EMPHYSEMA.

Synonym. Vesicular emphysema.

Definition. Dilatation of, or increase in the size and capacity of, the air vesicles, characterized by enlargement of the chest, difficulty of breathing, especially on exertion, and associated sooner or later with dilatation of the heart.

Causes. The *predisposing* cause of emphysema is a hereditary nutritive derangement of the lung structure, often associated with a rigid enlargement of the thorax.

The *exciting* cause is the result either of a *too forcible* and long continued inspiration—the *theory of inspiration*—or the *excessive* mechanical distention of the vesicular walls by forced expiration—the *theory of expiration*.

What is known as *vicarious emphysema* is a distention of the air cells of the healthy portion of the lung, some other part being the seat of consolidation.

Interlobular emphysema is the presence of air in the spaces between the lobules of the lungs underneath the pulmonary pleura.

Pathological Anatomy. The situation of vesicular emphysema is, in the majority of cases, the *superior portions* of the chest, and is more marked on the *left* side than on the right.

An emphysematous lung feels remarkably soft to the touch, and upon cutting, a dull, creaking sound is barely perceptible. It is of a pale red color, the vesicular walls are thinner and slighter, the vesicles are greatly enlarged, sometimes to the size of a pea or bean, and have an irregular shape, and traversing most of these large cysts (dilated vesicles) a few delicate bands, the remains of the lacerated inter-

alveolar septa, are visible. With the destruction of the septa many of the capillaries are destroyed, whereby the emphysematous tissue is remarkably bloodless and dry.

In consequence of the destruction of so many of the capillaries, the obstruction to the pulmonary circulation becomes so great that the pulmonary artery and right cavities of the heart are greatly distended; finally, the muscular tissue of the heart undergoes granular, followed by fatty degeneration. The distention of the veins results in a general venous stasis, to wit: nutmeg liver, congested kidneys, and gastro-intestinal catarrh.

Symptoms. The chief symptoms of vesicular emphysema are *difficulty of breathing*, greatly aggravated on exertion, more or less *cough*, the result of an attending bronchitis, and the various symptoms resulting from *dilatation of the heart*. The distress of the patient is often increased by paroxysms of asthma.

Inspection. The shoulders are rounded, the intercostal spaces widened, the vertical diameter elongated, with circumscribed prominences between the clavicles and nipples, often increased by the act of coughing—the peculiar “barrel-shaped” chest characteristic of this disease.

The character of the respiratory movements is marked, there being but slight movement observed on forcible respiration, the chest having the constant appearance of a full inspiration.

Palpation. The vocal fremitus is diminished, and the cardiac impulse depressed and nearer to the sternum.

Percussion. The *resonance is increased* (hyper-resonant) over all the emphysematous portions, and if the whole lung be involved, extends to the seventh or eighth rib anteriorly, and to the twelfth rib posteriorly. The hepatic dullness may not begin until the inferior margin of the ribs is reached; the cardiac dullness is lessened, on account of the emphysematous lung nearly covering the heart.

Auscultation. The vesicular murmur is *weakened*, and in pronounced cases almost *absent*. If bronchitis be present the inspiratory sound may be rough or sibilant in character, but its duration is always shortened. *Expiration is always prolonged*, and if bronchitis be present, may be associated with more or less pronounced moist or *bubbling râles*.

The *first sound* of the heart is lessened in intensity and duration, the *second sound* being sharply accentuated.

Diagnosis. *Bronchitis* is distinguished from emphysema by the absence of dyspnœa, hyper-resonance of the chest, changes in its shape, size and movements, and the disturbance of the circulation.

Spasmodic asthma by the paroxysmal character of the affection, emphysema being a permanent malady, with attacks of asthma.

Cardiac diseases due to other causes than emphysema do not have the characteristic physical signs of that affection.

Prognosis. Vesicular emphysema is essentially a chronic disease. In itself it rarely proves fatal, but if aggravated, from any cause, or if associated with frequent or prolonged asthmatic paroxysms the cardiac changes are hastened, general dropsy supervenes, death occurring from exhaustion, or, more commonly, as the result of inter-current attacks of pneumonia.

Treatment. It being impossible to restore the altered lung structure, the indications for treatment are to relieve the *symptoms* and to endeavor to prevent its further *progress*.

For the *relief* of the asthmatic paroxysms, *morphinæ sulphas* combined with *atrophinæ sulphas* may be used hypodermatically, or *ext. quebracho fld.*, ʒss-j, every hour until relief, or large doses of *potassii bromidum*, frequently repeated.

To *prevent the progress* of the affection, remove the bronchial catarrh, relieve the difficulty of breathing, and strengthen the cardiac action, no one combination seems comparable with the following:—

R.	Potassii iodidi.....	gr. v	
	Strychninæ sulph.....	gr. $\frac{1}{40}$	
	Liq. potassii arsenit.....	℥v	
	Aq. lauro-cerasi.....	fʒj.	M.

SIG.—Four times a day.

But of all means hitherto proposed for the relief of emphysema, nothing has approached the *inhalation of compressed air*, by means of the apparatus of Waldenberg.

The *dropsy* arising from failure of the heart to compensate for the circulatory derangement in the lungs, may be relieved for a time by the use of *digitalis*, or, if this fails, *scilla* combined with *hydragogue cathartics*.

DISEASES OF THE PLEURA.

PLEURISY.

Synonyms. Pleuritis; "stitch in the side."

Definition. A fibrinous inflammation of the pleura, either *acute*, *subacute* or *chronic* in character, occurring either idiopathically or secondarily; characterized by a sharp pain in the side, a dry cough, dyspnœa and fever. It may be limited to a part, or may involve the whole of one or both membranes.

Causes. *Idiopathic* pleuritis is said to be due to cold and exposure, to injuries of the chest walls, or the result of muscular exertion.

Secondary pleuritis occurs during an attack of pneumonia, pericarditis, rheumatism, smallpox, Bright's disease, or puerperal fever.

Chronic pleurisy follows an acute attack, or is the result of tuberculosis, Bright's disease, or alcoholism.

Pathological Anatomy. The course pursued by an inflammation of a serous membrane is *hyperæmia* followed by *exudation of lymph*, the *effusion of fluid*, its *absorption* and the *adhesion* of the membranes.

The *first or dry stage* of pleurisy is hyperæmia or diffused, irregular redness of the membrane, with little specks of exudation. The *second stage* is characterized by the copious exudation of lymph, more or less completely covering the membrane, giving it a dull, cloudy, or shaggy appearance. If the inflammation ceases at this point, it is termed *dry pleurisy*. The *third*, or stage of effusion, is characterized by the pouring out of a semi-fibrinous liquid; more or less completely filling and distending the pleural cavity, and floating in the fluid are fibrinous flocculi, blood and epithelial cells.

Absorption of the fluid and more or less of the exudative lymph soon occurs, the unabsorbed portion becoming organized, forming adhesions which obliterate the pleural cavity.

The effusion, if on the right side, pushes the heart further to the left; if on the left side, the heart is displaced to the right, the impulse often being seen to the right of the sternum. The lungs are also compressed and displaced upward and against the spinal column, and, on removal of the fluid, expand again, except in cases of chronic pleurisy, when the functional activity of the pulmonary structure is more or less permanently impaired.

Chronic pleurisy results when the fluid is not absorbed or when it is effused into the cavity in a slow and insidious manner. The membrane is irregularly thickened, with firm adhesions, fluid being found in the meshes, and depressions of the thoracic walls also occurring. The fluid may be serum, pus (*empyema*), or pus and blood. Openings may form, through which there is a permanent discharge, either externally (fistulous empyema) or into the bronchi, or rarely, into the bowels.

Symptoms. *Acute attack*; Begins with a *chill*, followed by a *sharp* lancinating *pain* (stitch) near the nipple or in the axilla, aggravated by coughing and breathing, associated with slight *tenderness on pressure*. The *respirations* are *rapid* and shallow, 30–35 per minute, a short, dry, hacking *cough*, moderate *fever*, compressible pulse, 90–120. With the effusion of liquid the *dyspnœa* becomes aggravated, the *cough* more distressing, the *cardiac action* embarrassed, the *countenance* wearing an anxious expression, the patient usually lying on the affected side. With the absorption of the fluid the symptoms gradually ameliorate, convalescence being more or less rapid.

Subacute attack; Begins insidiously after cold, exposure and fatigue in those enfeebled. Patients usually complain of a *sense of weariness*, *shortness of breath*, aggravated on exertion, evening *fever*, followed by *night sweats*, short, harassing *cough*, none or very scanty sputum; the *pulse* is small, feeble but frequent, 100–120 beats per minute. The characteristic pain in the side is usually wanting.

Chronic variety, irregular chills, fever, night sweats, dyspnœa, palpitation, embarrassed circulation, with more or less prostration.

Inspection. *First stage*, deficient movement of the affected side, on account of the pain induced by full breathing.

Second stage, bulging or fullness of the affected side, with obliteration of the intercostal spaces and displacement of the cardiac impulse.

Palpation. *Second stage*, vocal *fremitus* feeble or absent over the site of the effusion, exaggerated *above* the site of the fluid. Rarely, *fluctuation* may be obtained.

Percussion. *First stage*, may be slightly *impaired*.

Second stage, *dullness* or even flatness over the site of the effusion; *tympanitic* percussion note above the fluid.

Auscultation. *First stage*, feeble vesicular murmur over the affected side, the patient breathing superficially, to prevent the pain; a *friction* sound, slight and grating or creaking, becoming louder as

the exudation of lymph increases, limited usually to the angle of the scapula of the affected side, rarely heard over the entire side, accompanies the respiratory movements.

Second stage, feeble or absent vesicular murmur on the affected side, depending upon partial or complete compression of the lungs by the fluid. Above the fluid puerile breathing, and just at the upper margin of the fluid a friction sound may be heard.

The *vocal resonance* is diminished or absent over the site of the fluid and markedly increased above, *ægophony* being present at the upper margin of the fluid.

With the absorption of the fluid the vesicular murmur gradually returns, associated with a moist friction sound.

Diagnosis. *Acute pneumonia* is often mistaken for the effusion stage of pleurisy. The points of distinction are, in pneumonia there is the pronounced chill, high fever, and characteristic sputa, bronchial breathing, exaggerated vocal fremitus and resonance, and no displacement of the heart, the reverse occurring in pleurisy.

Enlargement of the liver may be mistaken for pleurisy with effusion, the chief point of distinction being that, in enlargement of the liver, the superior line of dullness is depressed upon full inspiration, while in pleurisy with effusion inspiration does not modify the location of the dullness.

Prognosis. *Idiopathic* pleurisy usually terminates in recovery within three weeks. Pleurisy the result of constitutional causes has its prognosis modified by the condition with which it is associated. *Empyema*, unless the result of a diathesis, terminates favorably. *Double pleurisy* is unfavorable.

Treatment. At the onset, in plethoric patients, *wet cups* over the affected side; if great dyspnœa, severe pain and high arterial tension, even *venesection*, and in anæmic or weak persons, *dry cups*. The severe pain is promptly relieved by the hypodermatic injection of *morphinæ sulphas*, over its site, repeated as indicated.

Tinct. verat. virid., or *tinctura aconiti*, in small doses, frequently repeated, in the plethoric, and *digitalis* in the weak, control the circulation, and lessen the amount of blood distributed to the affected membrane.

After effusion has begun, *extractum pilocarpi fluidum*, gtt. xx, every two or three hours, or—

R. Potassii acetat..... gr. xxx
 Infus. digitalis..... ℥ ij. M.
 Every three or four hours.

If the effusion be uninfluenced by the above, use *potassii iodidum*, gr. xv, every four hours, with flying *blisters* over the affected side ; or the fluid may be evacuated by *aspiration*, using at the same time full doses of *mistura ferri et ammonii acetatis* (*Basham's mixture*).

The effusion of pleuritis is rapidly removed by the method of treatment suggested by Prof. Mathew Hay, of Scotland, consisting in the use of a concentrated solution of saline cathartics, "order the patient to take nothing after the evening meal, and then, an hour or so before breakfast, the salt is given dissolved in as little water as possible. Usual dose from ℥ iv-vi to ℥ i-ij magnesii sulphates to an ounce or two of water, no fluids to be used after the dose ; this usually produces from four to eight watery stools without pain or discomfort and also acts as a diuretic."

The essence of the "Hay method" consists in getting the concentrated solution into the intestines at a time when the fluid contents are scanty.

If *double pleuritic effusion*, evacuate the fluid at once with the *aspirator*, and use the potassium and digitalis mixture mentioned above.

Chronic pleurisy : if the effusion be still serous, it is often absorbed by the internal use of *potassii iodidum*, alternating with "*Basham's mixture*," and *blisters*, the secretions being regularly attended to. If, however, the liquid is pus (*empyema*), the *aspirator* should be used at once, the patient placed upon "*Basham's mixture*," *stimulants* and *quinina*.

Usually, however, within a very few days after aspiration, another accumulation of pus will have taken place. Should this occur, the purulent pleurisy should then be treated as an abscess, an incision being made between the fifth and sixth ribs, the pus evacuated, a drainage tube introduced and an antiseptic dressing applied. If the tendency to pus secretion still remains the pleural cavity must be washed out with an antiseptic solution, the constitutional treatment being continued.

HYDROTHORAX.

Synonym. Dropsy of the pleura.

Definition. The effusion of fluid into the pleural cavities (bilateral), the result of a general dropsy from renal or cardiac disease.

Pathological Anatomy. More or less clear serous fluid in both pleural sacs, compressing the lungs. No signs of inflammation are present.

Symptoms. Following dropsy of the abdomen occurs *dyspnœa*, with signs of deficient blood aeration, both lungs being compressed.

Palpation. Absent vocal fremitus over the site of the fluid.

Percussion. Dullness over the site of the fluid.

Auscultation. Absent vesicular murmur over the site of the fluid.

Diagnosis. Easily determined by association of the symptoms with a general dropsy.

Prognosis. Controlled by the cause producing the general dropsy.

Treatment. Depending upon the condition causing the dropsy. *Dry cups* over the chest afford relief. If the symptoms of non-aeration of the blood are severe, the fluid should be at once evacuated with the *aspirator*.

PNEUMOTHORAX.

Synonyms. Air in the pleural cavity; hydropneumothorax.

Definition. The accumulation of air in the pleural cavities, with the consequent development of inflammation of the membranes; characterized by sharp pain, followed by rapidly developing dyspnœa and cough.

Causes. Generally the result of tubercular phthisis, causing perforation of the pleura. Perforation may take place from the pleura into the lung, in connection with empyema or abscess of the chest walls. Direct perforation from without, by laceration of a fractured rib or severe contusion.

Pathological Anatomy. The gas in the pleural cavity consists of oxygen, carbon anhydride, and nitrogen in variable proportions. It may fill the pleural sac completely, compressing the lung, or is sometimes limited by adhesions. The gas tends to excite inflammation, the resulting effusion being either serous or purulent.

Symptoms. Symptoms of pneumothorax, the result of perforation, are *sudden or sharp pain* in the side, *intense dyspnœa*, attended with symptoms of *collapse*, coldness of the surface and cold sweats.

The above symptoms, in many instances, follow a severe or violent paroxysm of *coughing*. In severe cases there is never a moment's

cessation of the acute pain and distressing dyspnœa, causing orthopnœa from the onset until death.

Inspection. Enlargement of the affected side, the intercostal spaces being widened and effaced, or even bulged out so that the surface of the chest is smooth. Respiratory movements of the affected side are diminished or absent.

Percussion. Immediately after the rupture the percussion note is hyper-resonant, or even tympanitic or amphoric in quality. If the amount of air in the pleural cavity become extreme there is dullness on percussion, associated with a feeling of great resistance or density. When effusion of blood occurs dullness is observed over the lower part of the chest, hyper-resonant or tympanitic percussion note over the upper portions of the chest, these sounds changing as the patient changes his position.

Auscultation. The normal vesicular murmur may be diminished or absent. The typical amphoric respiratory sound is heard when the fistula is open, usually associated with a metallic echo.

Metallic tinkling, or the bell sound, is sometimes distinctly produced by breathing, coughing or speaking, after the development of inflammation of the pleura.

The vocal resonance may be diminished or absent, or, rarely, it may be exaggerated, with a distinct metallic echo.

After the development of inflammation in the pleura, suddenly shaking the patient gives rise to a *splashing sensation*, the succussion sound, if both air and fluid are present in the pleural cavity.

Prognosis. When occurring as the result of tuberculosis, the prognosis is extremely unfavorable; rarely, the fistulous opening being enclosed by inflammatory action; the case then becomes one of chronic pleurisy.

Treatment. At once a hypodermatic injection of *morphinæ sulphas*, which relieves the severe pain and somewhat modifies the distressing dyspnœa, followed by the evacuation of the fluid and air with the *aspirator*.

If the fistulous opening be closed by inflammatory action, the case resolves itself into one of chronic pleurisy, the treatment indicated for that affection plus the treatment of tuberculosis, being the indication.

DISEASES OF THE CIRCULATORY SYSTEM.

The methods employed in making a physical examination of the heart are : I. *Inspection*. II. *Palpation*. III. *Percussion*. IV. *Auscultation*.

Inspection indicates the exact point of the *cardiac impulse*, and whether there be any abnormal *pulsations* or any *change* in the form of the *præcordium*.

Normally the *impulse* is visible only in the *fifth interspace*, midway between the left nipple and the left border of the sternum, its area covering about one square inch, most distinct in the thin, while often barely seen in the very fleshy ; often displaced downward by full inspiration and elevated by complete expiration.

Disease may alter the *position* and *area* of the impulse.

The *position* of the impulse is moved to the right by left pleuritic effusions ; downward by hypertrophy or emphysema ; upward by pericardial effusion.

The *area* of the impulse is changed and enlarged by pericardial adhesions, cardiac dilatation, or hypertrophy.

Palpation confirms the observations of inspection, and also determines the *force*, *frequency* and *regularity* of the *cardiac impulse*.

The *impulse* is *diminished* by cardiac dilatation, fatty degeneration of the heart, emphysema, pericardial effusion, and adynamic diseases.

The *impulse* is *increased* by cardiac hypertrophy, during the first stage of endocarditis and pericarditis, functional cardiac disturbances and sthenic inflammations.

Percussion will indicate the boundaries of the *superficial* and *deep cardiac space*, the so-called *præcordium*. It is essential that the upper, lower, and two lateral boundaries of the pericardial region be memorized, to wit : *superior boundary*, the upper edge of the third rib ; *the lower boundary* is a horizontal line passing through the fifth intercostal space ; *the left lateral boundary* is about or a little within a vertical line passing through the nipple, the *linea mammalis* ; and *the right lateral boundary* is an imaginary vertical line situated one-half an inch to the right of the sternum. These boundaries vary somewhat in health, but are sufficiently accurate for all practical purposes.

The superficial cardiac space represents that portion of the heart uncovered with lung; it is triangular in form, its apex being the junction of the lower border of the left third rib with the sternum, its area not exceeding two inches in any direction.

The superficial space is *increased* by cardiac hypertrophy, dilatation or pericardial effusion.

Diminished at the end of full inspiration or by emphysema.

The deep cardiac space represents that portion of the heart covered by lung, and extends from the upper border of the third rib to the lower edge of the fifth interspace, and from half an inch to the right of the sternum to near the left nipple.

It is *increased* by hypertrophy or dilatation of the heart, left pleuritic effusion, and apparently increased by consolidation of the anterior border of the investing lung.

Auscultation indicates the character of the normal cardiac sounds and the point of greatest intensity at which they are heard, and should be thoroughly familiarized if abnormal sounds are to be fully appreciated.

The ear or stethoscope applied to the præcordium distinguishes *two sounds*, separated by a momentary silence—the *short pause*, and the second sound followed by an interval of silence—the *long pause*.

The first sound, corresponding to the contraction of the heart—the *systole*—is louder, longer and of lower pitch and a more booming quality than the second sound, and has its point of greatest intensity at the cardiac apex or a little to the left. It corresponds closely to the pulsations as felt in the carotid or radial arteries.

The second sound is shorter, weaker and higher in pitch than the first sound, and has a clicking or valvular quality, having its point of greatest intensity at the second right costal cartilage and a little above, and corresponds to the closure of the aortic and pulmonary valves. The sound made by the closure of the tricuspid valves is best isolated at the ensiform cartilage. The sound made by the closure of the pulmonary valves at the third left costal cartilage.

The extent of surface over which the cardiac sounds are heard varies, according to the size of the heart and the condition of the adjacent organs for transmitting sounds.

The cardiac sounds may be altered in *intensity, quality, pitch, seat and rhythm*, or they may be accompanied, preceded or followed by adventitious or new sounds, the so-called *endocardial murmurs*.

The intensity is increased by cardiac hypertrophy, irritability of the heart or consolidation of adjacent lung structure.

The intensity is diminished by cardiac dilatation or degeneration during the course of adynamic fevers, emphysematous lung overlapping the heart, or pericardial effusion.

The quality and pitch of the first sound may be sharp or short and of higher pitch when the ventricular walls are thin and the valves normal; its pitch and quality are also raised during the course of low fevers. The second sound becomes duller and lower in pitch when the elasticity of the aorta is diminished or the aortic valves thickened. Either or both sounds have a more or less metallic quality in irritable heart and during gaseous distention of the stomach.

The seat of greatest intensity of the cardiac sound is changed by displacement of the heart, pleuritic effusion, pericardial effusion, and abdominal tympanites.

The rhythm is often interrupted by a sudden pause or silence, the heart missing a beat, or the sounds are irregular, confused and tumultuous, the result of organic changes in the cardiac muscles, valves, or orifices; or a reduplication of one or both sounds of the heart may occur.

The *adventitious cardiac sounds or murmurs* are of two kinds, those made external to the heart, as *pericardial*, exocardial or frictional murmurs, and those made within the cardiac cavity, *endocardial murmurs*.

Pericardial murmurs, or friction sounds, are made by the rubbing upon one another of the roughened surfaces of the pericardial membrane during the early stage of inflammation. The sounds have a rubbing, creaking, or grating character, and are differentiated from a pleural friction sound by their being limited to the præcordium, synchronous with every sound of the heart, and not influenced by respiration.

They are distinguished from an endocardial murmur by their superficial rubbing, creaking or grating character, and by not being transmitted beyond the limits of the heart, either along the course of the vessels, or to the left axilla, or back.

Endocardial murmurs are of two kinds, to wit: *organic* and *functional*.

Functional endocardial or blood murmurs are the result of some change in the natural constituents of the blood.

Their character is soft, they are heard most distinctly at the base to the left of the sternum, during the systole, are not transmitted beyond the limits of the heart, either to the left axilla or the back, and are associated with general anæmia.

Organic endocardial murmurs are produced by blood currents pursuing either a *normal* or an *abnormal* direction.

In health there are *two direct blood currents* upon each side of the heart, to wit: the current from the left auricle to the left ventricle, the *mitral direct current*; the current from the left ventricle to the aorta, the *aortic direct current*; the current from the right auricle to the right ventricle, the *tricuspid direct current*, and the current from the right ventricle to the pulmonary artery, the *pulmonic direct current*.

When, from disease, the valves are not properly closed, the blood is allowed to flow back against the direct current, producing abnormal blood currents, to wit: when the mitral valve is incompetent, the blood flows from the left ventricle back to the left auricle during the cardiac systole, producing the *mitral regurgitant or indirect current*; when the aortic valves are incompetent, the blood is permitted to flow from the aorta into the left ventricle during the cardiac systole, producing the *aortic regurgitant or indirect current*; when the tricuspid valves are incompetent, the blood flows from the right ventricle back into the right auricle during the systole, producing the *tricuspid regurgitant or indirect current*; when the pulmonary valves are incompetent, the blood flows from the pulmonary artery into the right ventricle, producing the *pulmonic regurgitant or indirect current*.

The *mitral direct current* occurs during the contraction of the left auricle, or just *before* the first sound of the heart and immediately *after* its second sound. The *aortic direct current* is produced by the contraction of the left ventricle, and occurs with the first sound of the heart. The *tricuspid direct current* occurs during the contraction of the right auricle, or just before the first or immediately after the second sound. The *pulmonic direct current* is produced by the contraction of the heart, occurring during its first sound.

The *mitral direct, or presystolic murmur*, occurs *before* the first sound of the heart and immediately *after* the second sound. It is caused by a narrowing of the mitral orifice, has a blubbery quality, well imitated by throwing the lips into vibration by the breath, of a low pitch, and it has its seat of greatest intensity at the cardiac apex, and is not transmitted to the left axilla or to the base of the heart.

The mitral regurgitant, or systolic murmur, occurs with the first sound of the heart, resulting from the failure of the mitral valves to close the mitral orifice during the systole, in consequence of which the blood flows back, or regurgitates into the left auricle. It is usually of a blowing or churning character, and has its seat of greatest intensity at the cardiac apex, being well transmitted to the left axilla and inferior angle of the left scapula.

The aortic direct murmur occurs with the first sound of the heart. It is caused by a narrowing of the aortic orifice, has a rough or creaking character, is of high pitch, having its seat of greatest intensity in the second intercostal space, to the right of the sternum, and is well transmitted over the carotid artery.

The aortic regurgitant murmur occurs with the second sound of the heart, and is caused by the failure of the aortic valves to close the aortic orifice during the diastole, whereby the blood flows back or regurgitates into the left ventricle. It is usually of a blowing or churning character and of low pitch, having its seat of greatest intensity over the base of the heart, and is well transmitted downward toward or below the cardiac apex. It is the only organic murmur produced in the left side of the heart which occurs with the second sound of the heart.

The tricuspid direct murmur occurs before the first sound of the heart and immediately after the second sound. It is caused by a narrowing of the tricuspid orifice, has a blubbery quality, and is low in pitch, having its seat of greatest intensity near the ensiform cartilage. This murmur is exceedingly rare.

The tricuspid regurgitant murmur occurs with the first sound of the heart, the result of the failure of the tricuspid valves to close the tricuspid orifice during the systole, thus allowing the blood to flow back or regurgitate into the right auricle. It is usually of a blowing or soft, churning character, having its seat of greatest intensity at the ensiform cartilage. This murmur is also very infrequent, and occurs mostly when the right ventricle is considerably dilated, without the existence of any valvular disease.

The pulmonic direct murmur occurs with the first sound of the heart. It is generally connected with congenital lesions. It occurs at the same instant that the aortic direct murmur occurs, and is distinguished from the latter by its not being transmitted into the carotid artery, whereas the aortic direct murmur is always thus transmitted.

The pulmonic regurgitant murmur occurs, like the aortic regurgitant murmur, with the second sound of the heart. This murmur is exceedingly rare, and its presence is only positively differentiated from aortic regurgitant by the absence of aortic lesions and symptoms.

ACUTE PERICARDITIS.

Definition. An acute fibrinous inflammation of the pericardium ; characterized by slight fever, pain, præcordial distress and disturbed cardiac action and circulation.

Causes. May follow injuries of the chest walls, but generally secondary to either acute articular rheumatism, pneumonia, pleurisy, erysipelas, Bright's disease or pyæmia.

Pathological Anatomy. The same as serous membranes in other situations.

Hyperæmia of the membrane, most marked on the visceral layer, followed by the exudation of lymph scattered in irregular patches, giving it a rough and shaggy appearance (*dry pericarditis*), followed by the effusion of a sero-fibrinous fluid, with flocculi floating on it, and at times mixed with blood. Rarely, the fluid is purulent.

The fluid and lymph undergo absorption with resulting adhesions identical with those described under pleurisy.

Symptoms. Acute pericarditis may be well marked and still present none of the characteristic subjective symptoms. It usually begins with *rigors*, *fever*, *præcordial distress*, *acute shooting pains*, increased by breathing and coughing, *tenderness*, dry, suppressed *cough*, *increased cardiac action*, sometimes violent palpitation. Duration of this early stage from a few hours to a day.

Effusion stage : the symptoms of this stage depend upon the amount and rapidity of the effusion : *præcordial oppression*, tendency to *syncope*, *dyspnœa*, sometimes amounting to orthopnœa, *dysphagia*, *hic-cough*, nausea and *vomiting*, feeble, irregular *pulse*, sometimes either melancholia, delirium, or acute maniacal excitement,

Absorption is generally rapid, the heart remaining "irritable" for a long time after. If instead of absorption, the fluid accumulates, and life is not destroyed, the pericardial sac becomes dilated, chronic pericarditis resulting.

Inspection. *Early stage*, excited cardiac action is evidenced by the impulse.

Effusion stage, feeble, undulatory or absent impulse, its position displaced upward, or rarely, downward; bulging of the præcordium and protruding abdomen.

Palpation. *Early stage*, excited or tumultuous impulse; pericardial friction fremitus rare.

Effusion stage, feeble or absent impulse, and if present its position is changed.

Percussion. *Early stage*, normal.

Effusion stage, cardiac dullness enlarged vertically and laterally, and if considerable fluid, of a *triangular shape*, with the base of the triangle on a line with the sixth rib, extending from the right of the sternum to the left of the left nipple, narrowing as it proceeds upward to the second rib, or above, which represents the apex of the triangle. The shape of the dullness is sometimes altered by changing the position of the patient.

Auscultation. *Early stage*, excited cardiac action, and usually a *friction sound* (exocardial murmur) synchronous with cardiac sounds and uninfluenced by respiration, but often increased by pressure with the stethoscope.

Effusion stage, cardiac sounds feeble and deep-seated at the cardiac apex, becoming louder and distinct toward the cardiac base. The friction sound is sometimes heard at the cardiac base.

If *absorption* occur the above signs gradually give place to the normal, the friction sound returning, of a churning, or clicking, or grating character, gradually disappearing.

Diagnosis. *Endocarditis* is often confounded with pericarditis, the points of distinction between which will be pointed out when discussing that affection.

Cardiac hypertrophy or *dilatation* is sometimes confounded with pericardial effusion; the difference between them will be pointed out when discussing those affections.

Hydropericardium may be mistaken for pericardial effusion; see that affection.

Prognosis. Controlled by the severity of the inflammation and coexisting affections. If slight effusion, favorable. Death has rapidly occurred when a large quantity of fluid has been rapidly effused, the result of cardiac paralysis. *Adherent pericardium* is a frequent sequela.

Treatment. *Perfect rest* in bed; for vigorous patients, the appli-

cation of *leeches* or *wet cups* to the præcordium, followed by the application of either *ice* or *poultices*; in the feeble *dry cups* to the præcordium, followed by poultices.

Early stage; in the strong, control the excited cardiac action by small doses of *aconitum* or *veratrum viride*, in the feeble using *digitalis*; in all cases *quinina* is indicated.

Effusion stage; as the effusion progresses the free administration of *alkalies*, to wit: *ammonii carb.*, gr. v, every two hours, with *liquor ammonii acetatis*, or *potassii acetat.*, or *potassi carbon*, with *quinina*, nutritious liquid diet and *stimulants*, being cautious with the use of cardiac sedatives or tonics.

If the effusion has a tendency to linger, *blisters* to the præcordium, or *paracentesis*, is indicated.

CHRONIC PERICARDITIS.

Definition. A chronic inflammation of the pericardium, with either distention of the sac by fluid or adhesions of the pericardium (adherent pericardium); characterized by impaired cardiac action and disturbances of the circulation.

Causes. Almost always the result of an acute attack.

Pathological Anatomy. If the effusion be absorbed, the pericardial surfaces are *agglutinated* by several layers of lymph, which increase the thickness of the membranes half an inch or more, and the outer surface of the pericardium becomes adherent to the chest walls.

If the fluid be not absorbed it may progressively accumulate, distending the sac in all directions, displacing the diaphragm, interfering with the functions of the surrounding viscera, or a low grade of inflammation supervenes, the fluid becoming purulent, the disease terminating fatally after a variable period.

As much as eight to ten pints of fluid have accumulated in the sac.

Symptoms. *Præcordial pain* and *distress*, irregular, *feeble cardiac action*, *dyspnœa*, aggravated by movement and *disturbed circulation*.

An agglutinated pericardium seriously increases the danger from an attack of any pulmonary inflammation.

Inspection. If the effusion be present, bulging of the præcordium and displacement of the impulse.

If adhesions are formed between the præcordial surfaces as well as with the chest walls, inspection reveals *depression of the præcordium*, narrowing of the spaces, increased extent but displaced impulse, uninfluenced by deep inspiration, and *recession* of the intercostal spaces (*systolic dimpling*) and epigastrium with every systole of the heart, the result of the adhesions.

Palpation. If effusion, displaced, feeble or absent impulse; if adhesion, displaced and tumultuous impulse; occasionally a pericardial fremitus is distinguished.

Percussion. If effusion, the dullness has more or less the character described for acute pericarditis.

If adhesions, the cardiac dullness is but slightly modified.

Auscultation. If effusion, cardiac sounds feeble and deep-seated at the apex, louder and more distinct at the cardiac base.

If adhesions, cardiac sounds are heard with equal distinctness in their several positions, associated with a rough friction sound (exocardial murmur).

Treatment. If effusion, *blisters* to the præcordium, with *potassii iodidum* to hasten absorption, the patient supported by nutritious diet, *quinina*, *ferrum* and *stimulants*, and perfect quiet. If these means fail to remove the fluid, or if the fluid be purulent, *paracentesis* should be performed at once.

If adhesions of the pericardium have resulted, the application of blisters to the præcordium with the administration of *potassii iodidum*, alternating with *ferrum* and *quinina* are indicated, with nutritious diet, stimulants and perfect quiet.

HYDRO-PERICARDIUM.

Synonym. Pericardial dropsy.

Definition. The accumulation of water in the pericardial sac, *minus* inflammation; characterized by præcordial distress, disturbed cardiac action, dyspnœa and dysphagia.

Causes. Usually a part of a general dropsy; Bright's disease; sudden pneumothorax; pressure of an aneurism or other mediastinal tumor; disease or thrombosis of the cardiac veins.

Pathological Anatomy. The fluid may range in quantity from an ounce to one or two pints, and is of a clear, yellowish or straw-colored serum, at times turbid or bloody, and of an alkaline reaction.

If the amount of fluid be large the sac is dilated, its walls thinned by the pressure, and has a sodden appearance.

Symptoms. Dropsy of the pericardium is so generally associated with hydrothorax that the symptoms are but an aggravation of those attending upon that condition, to wit: *disturbed cardiac action, dyspnoea, dysphagia, dry cough, and feeble circulation.*

The physical signs are exactly those of the stage of effusion of pericarditis, *minus* a friction sound.

Diagnosis. *Pericarditis with effusion* and hydro-pericardium present nearly the same signs and symptoms, a differentiation being possible only by a history of the case and the symptoms of the attack.

Prognosis. Controlled entirely by the cause.

Treatment. Depends upon the cause of the attack. If the amount of fluid in the pericardial sac be great, *paracentesis* will give relief.

ACUTE ENDOCARDITIS.

Synonym. Valvulitis.

Definition. An acute fibrinous inflammation of the serous membrane lining the cavity of the heart and forming its valves; characterized by cough, dyspnoea, nausea and vomiting, disturbed cardiac action, resulting in changes in the valves or orifices of the heart.

Causes. Usually secondary to acute articular rheumatism, pleuritis, pneumonia, pericarditis or Bright's disease.

Pathological Anatomy. Inflammation of the endocardium is usually limited to the left side of the heart after birth, during foetal life the reverse being the case. The inflammation is limited or especially marked at the valvular portions of the endocardium, owing probably to the presence of fibrous tissue beneath the membrane in these situations, and to the strain which falls upon the valves during the performance of their functions.

Hyperæmia from congestion of the vessels beneath the membrane, with considerable swelling of the valves, the result of an *exudation of lymph and serum* beneath and on the free surface of the membrane covering the valves and *chordæ tendineæ*, resulting in the roughening of the surfaces and the agglutination of the mitral valves to each other, and of the aorta segments to the walls of the aorta, or the proliferation of the endocardial connective tissue, forming the nuclei of the so-called warty excrescences or vegetations, their size being in-

creased by the deposit of fibrin from the blood within the cavities of the heart.

These vegetations may be detached by friction, giving rise to *emboli* which may be washed by the blood current on the left side of the brain, into the kidneys and spleen.

Rarely, ulceration of the endocardium follows the above phenomena.

Symptoms. This affection is usually masked by the course of another disease until disturbances of the circulation direct attention to the heart.

The *onset* is often by *increase of temperature, præcordial distress, short cough, slight dyspnœa*, more or less persistent *vomiting, increased cardiac action*, often rapid and tumultuous, with *throbbing carotids* and noises in the ear. As the inflammation progresses, the cardiac action and pulse decline in rapidity, with more or less congestion of the lungs and venous stasis.

Auscultation. Shows a change in the character of the sounds or the development of murmurs at the various orifices, the character and points of distinction between which will be pointed out when discussing valvular diseases of the heart.

Duration. Between one and three weeks.

Diagnosis. *Pericarditis* is distinguished from endocarditis by the character of the physical signs. In *pericarditis* the murmur or friction sound is heard with either sound, is near to the ear and influenced by pressure of the stethoscope, besides being associated with more or less alteration in the size and shape of the cardiac dullness, and is not transmitted, while in *endocarditis* the murmur takes the place of, or is associated with, the cardiac sounds, and is transmitted, with the absence of change or increased dullness on percussion.

Prognosis. Acute endocarditis is not very dangerous to life, hence a favorable prognosis may be given; regarding the ultimate results of valvular lesions, however, the prognosis is grave.

Treatment. *Perfect rest in bed.* At the onset leeches or *wet cups* to the præcordium, followed by ice, or, what is preferable, *poultices*.

The excited circulation should be controlled by *aconitum, veratrum viride*, or *digitalis*.

The free administration of *alkalies*, to wit: *ammonii carbonas, potassii acetat*, or *carbonas*, until the urine is decidedly alkaline, may prevent permanent changes of the valves or orifices.

If alkalies fail and the inflammation shows a tendency to linger, good results are often obtained by a slight *hydrargyrum* impression.

If signs of oppressed circulation appear, the hands becoming blue, the face and extremities œdematous, with congestion of the lungs, the free use of *ammonii carbonas*, *digitalis* and *stimulants* are indicated. The free use of *ammonii carbonas* will often prevent or break up heart clots. After the acute symptoms have subsided, more or less absorption of the exuded lymph has followed the free use of *potassii iodidum*. During the entire course of the affection the diet should be of the most nutritious character.

ACUTE MYOCARDITIS.

Definition. An inflammation of the muscular tissue of the heart, by extension from an inflamed pericardium or endocardium, or secondary to pyæmia; characterized by pain, feeble circulation, symptoms of blood poisoning and collapse.

Causes. The result of endocarditis or pericarditis; pyæmia; typhoid fever; emboli of the coronary arteries.

Pathological Anatomy. Discoloration and softening of the cardiac substance and the infiltration of a sero-sanguinous fluid, fibrinous exudation and pus, leading to the formation of abscesses in the muscular structure of the heart.

The disease leads to the formation of either a cardiac aneurism or to rupture of the walls of the heart. If recovery occur, cicatrices or depressed scars may mark the site of a former abscess.

Symptoms. The clinical evidences of inflammation of the cardiac muscle are very obscure. If, during the course of one of the maladies mentioned, there are developed *pain*, irregular and feeble *cardiac action*, *pyrexia* of a low type, with symptoms of *blood poisoning*, and a tendency to *collapse*, or the symptoms of the so-called *typhoid state*, myocarditis may be suspected.

Diagnosis. The existence of myocarditis can scarcely ever be anything but a presumption, the signs being all negative rather than positive. If during the course of rheumatism, pyæmia, puerperal fever, typhoid fever, pericarditis or endocarditis, symptoms of cardiac failure appear suddenly, associated with signs of blood poisoning and collapse, inflammation of the cardiac muscle may be suspected.

Prognosis. The course of acute myocarditis is very rapid, death

being the usual termination, in from three to five days. Chronic myocarditis pursues a very latent course.

Treatment. Largely symptomatic. Perfect rest of mind, generous diet, free stimulation and the administration of *quinina* and *ferrum*.

CARDIAC HYPERTROPHY.

Definition. An overgrowth or increase in the muscular tissue which forms the walls of the heart; characterized by forcible impulse, over-fullness of the arteries, diminished blood in the veins and accelerated circulation.

Causes. Obstruction to the outflow of blood, to wit: aortic stenosis; emphysema; Bright's disease; functional over-action; excessive use of tobacco, tea, coffee, or excessive muscular action.

Varieties. I. *Simple hypertrophy*, or a simple increase in the thickness of the cardiac walls; II. *Eccentric hypertrophy*, increase in the cardiac walls and dilatation of the cavities, to wit:—*Dilated hypertrophy*; III. *Concentric hypertrophy*, increase in the cardiac walls and decrease of the cavities, a very rare form. ●

Pathological Anatomy. Hypertrophy of the heart is usually limited to the left side, the ventricles more commonly than the auricles, the latter dilating.

The shape of the heart is altered by hypertrophy; if the right ventricle, the heart is widened transversely and the apex blunted; if the left ventricle, the heart is elongated and, as a rule, the cavity is dilated; if both ventricles are hypertrophied, the heart has a globular shape. From increase in weight the heart may sink lower during the recumbent position, thereby lessening the area of cardiac dullness, but during the sitting or upright posture it sinks lower in the chest and to the left, causing more or less prominence of the abdomen.

The increase in the size of the organ is a true increase or hypertrophy of the muscular tissue, and not a hyperplasia. The tissue is firmer and the color brighter and fresher than when the size of the organ is normal.

Symptoms. Depend upon the amount of hypertrophy. The most common are *increased and forcible cardiac action*, the arteries becoming fuller, the veins less full and the circulation accelerated, *pulsating carotids* and *aorta*, *headache*, often *vertigo*, frequent *epistaxis*, *congestion of the face and eyes*, *tinnitus aurium*, *dyspnœa* on

exertion, *dry cough*, restless nights, with more or less jerking of the limbs, occasional præcordial pains shooting toward the left axilla, full, firm, *bounding pulse*, and pulsations in the superficial arteries.

A sphygmographic tracing shows the line of ascent vertical and abrupt, but the apex is rounded, and the line of descent is oblique, unless there is more or less insufficiency of the valves.

Inspection. Often fullness or prominence of the præcordium, with distinct impulse.

Palpation. The impulse is felt one or two intercostal spaces lower down and to the left, and is stronger and more or less diffused—the heaving impulse.

Percussion. The area of cardiac dullness is increased vertically and transversely upon the left side of the sternum, unless the right ventricle is also hypertrophied, when the cardiac dullness is increased to the right of the sternum.

Auscultation. If simple hypertrophy without any coexisting changes in the valves or orifices, the first sound has a loud and somewhat metallic quality, the second sound being strongly accentuated.

Sequelæ. Cerebral hemorrhage; miliary cerebral aneurisms; dilatation of the heart; fatty changes in the cardiac tissue.

Diagnosis. Hypertrophy of the heart can scarcely be mistaken for any other disease if a careful study of the physical signs be made.

Prognosis. When the result of valvular disease, the hypertrophy is said to be compensatory. If the result of Bright's disease, emphysema of the lung, or if occurring late in life, or associated with atheromatous degeneration of the vessels, the prognosis is unfavorable; when the result of functional over-action in the strong and robust, a further enlargement can often be prevented by active and persistent treatment.

Treatment. The indications are to *lessen the force* and *number* of the cardiac pulsations and to *remove the cause* whenever possible.

The former indications are best met by the persistent use of *aconitum* in small doses, gtt. i-ij, three times a day, or *veratrum viride*, gtt. i-ij, three times a day, at the same time keeping the bowels, kidneys and the skin acting freely.

The habits of the patient are to be corrected, all laborious or active exercise to be restricted, the patient to be in the recumbent posture several hours during the day if possible, the diet being restricted,

avoiding all forms of stimulants, to wit: liquors, tobacco, tea and coffee.

Cases of cardiac hypertrophy associated with anæmia should, in addition to the above, be placed upon a course of *ferrum*.

DILATATION OF THE HEART.

Definition. An increase in the size of one or more of the cavities of the heart, without any increase or thickening of the cardiac walls; in fact, the walls are frequently thinner; characterized by feebleness of the circulation, terminating in venous stasis, œdema and exhaustion.

Causes. Over-exertion in those of feeble resisting powers, as youths or soldiers, as first pointed out by Prof. Da Costa; insufficiency of the valves; emphysema; chronic bronchitis; gout; Bright's diseases.

Varieties. I. *Simple dilatation*, the cavities being enlarged, the walls normal. II. *Active dilatation*, corresponding to eccentric hypertrophy; the cavities being enlarged and the walls increased in thickness, the so-called "dilated hypertrophy." III. *Passive dilatation*, the cavities being enlarged and the walls thinned or stretched.

Pathological Anatomy. The right side of the heart is far more frequently involved than the left side. The shape of the organ is altered, according to the part affected. The weight of the organ is, as a rule, increased, as hypertrophy almost always accompanies or precedes dilatation.

The muscular tissue is generally pale, mottled and softened, and under the microscope presents evidences of degeneration. The orifices also participate, and especially the auriculo-ventricular, resulting in the valves becoming incompetent to close the orifices, and this latter effect is added to by the removal of the basis of the papillary muscles to a great distance from the orifice, in consequence of the extension of the wall.

When the auricles dilate, the large venous trunks opening into them unprotected by valves commonly participate in the dilatation, and may become greatly enlarged.

The passive congestion of the organs that follows the feeble circulation produces changes in their structure.

Symptoms. Those associated with enfeebled circulation, to wit: *feeble pulse*, veins distended, arteries emptied, *headache*, aggravated by the upright position, attacks of *syncope*, *cough*, with any of the fol-

lowing phenomena of venous congestion; of the lungs, *dyspnœa*; liver, *jaundice*; stomach, *dyspepsia*; intestines, *constipation*; kidneys, *scanty* often albuminous *urine*; brain, *dullness* of the mind and *vertigo*, often relieved by a copious epistaxis; and, finally, *dropsy*, beginning in the lower extremities, the patient dying from exhaustion.

Great relief often temporarily follows any of the above symptoms under treatment; sooner or later, however, the venous stasis produces the final symptoms noted.

Inspection. Veins of the surface distended and enlarged; indistinct cardiac impulse, often diffused and wavy; if associated with tricuspid insufficiency, there is pulsation of the jugular.

Palpation. Feeble and irregular fluttering but heaving impulse.

Percussion. Cardiac dullness extended transversely, and especially increased on the right side.

Auscultation. If no valvular lesion accompany the dilatation the cardiac sounds are weaker than normal, the first sound having a sharper quality than normal; if accompanied by valvular lesions, cardiac murmurs are present.

Diagnosis. *Hypertrophy* of the heart shows increased cardiac dullness, and is a disease of powerful cardiac action, while dilatation is an affection of feeble action associated with dropsy.

Pericardial effusion has many points of resemblance to cardiac dilatation, but it begins suddenly, associated with some acute malady; and while the heart sounds are indistinct or feeble at the apex, they both have their normal qualities at the cardiac base, while dilatation of the heart has a chronic history, results in general venous stasis, the cardiac sounds being of the same intensity over the entire præcordia.

Prognosis. Unfavorable, death resulting from gradual exhaustion, or suddenly by cardiac paralysis if there be undue excitement.

Treatment. The general nutrition of the patient must be promoted to the uttermost. Generous diet, moderate exercise, with *bitters* to increase the appetite and *ferrum* to improve the blood, and, in a majority of cases, the more or less free use of a good *red wine*.

The heart tonics are *digitalis* in powder or infusion; *ext. convallariæ*, *fld.*, grt. v, t. d., *quinina*, *caffèina* and *morphina sulph.*, in small doses, the latter when the dropsy becomes great and associated with marked cyanosis, hypodermatically, as suggested by Prof. Bartholow, "often acts like magic in restoring the circulation."

The following pill is often of great advantage, to wit :—

R.	Ferri redact.....	gr. j-ij	
	Quininae sulph.....	gr. j-ij	
	Pulv. digitalis.....	gr. j	
	Morphinae sulph.....	gr. $\frac{1}{4}$.	M.

SIG.—Three times a day.

The secretions should be stimulated by *purgatives*, *diuretics* and *diaphoretics*.

If pulmonary congestion, *dry cups*, *digitalis* and *stimulants*.

For cardiac asthma, *dry cups*, *morphinae sulph.* hypodermatically, or *spts. ætheris compositus* (Hoffman's Anodyne).

For hepatic congestion, *blue mass* or *podophyllin*.

For dropsy, *dry cups* over the kidney, *digitalis* or *potassii acetat*, with *scoparius* and *juniperus*, and *pulv. jalapæ comp.*, \mathfrak{z} j-ij, in water, before breakfast.

If the dropsy is uninfluenced by the above means, success will follow the use of *hydrargyri chlor. mite*, gr. iij, guarded with *pulv. opii*, gr. $\frac{1}{12}$, three or four times a day, as I have frequently witnessed.

FATTY DEGENERATION OF THE HEART.

Definition. A change in the muscular fibres of the heart, in which the transverse striæ are replaced by granules and globules of fat; characterized by feeble cardiac action, venous stasis and dyspnœa.

Causes. Impaired nutrition in the elderly; prolonged anæmia; chronic gout; alcoholism; phosphorus poisoning; cancer, tuberculosis and scrofula; disease of the coronary arteries.

Pathological Anatomy. The distinction must be made between a deposit of fatty tissue upon or around the heart, and the degeneration of its muscular tissue.

The fatty metamorphosis may affect the whole organ, or the entire ventricles, or be limited to portions of them. If the degeneration be marked the color is yellowish, the tissues soft and easily torn, and to the touch have a greasy feeling, oil being yielded on pressure.

The microscopic changes are characteristic. The striæ of the muscle are easily rendered indistinct by fat and oil globules, gradually becoming more and more obscured, and finally disappearing altogether, the fibres being replaced by fat granules.

Symptoms. Those of weak heart, anæmia of organs and venous stasis, to wit: *feeble, irregular*, but slow *cardiac action*, *compressible pulse*, *præcordial distress*, often aggravated by attacks of angina pectoris; *dyspnæa*, aggravated on exertion, with anæmia of the various organs from the feeble propulsive power; if of brain, *vertigo*, swooning, or pseudo-epileptic attacks, especially marked on suddenly rising from a recumbent position; if of lungs, *dry*, hacking *cough*; if of gastro-intestinal tract, *dyspepsia* and *constipation*; if of kidneys, *scanty urine*, at times albuminous; and finally, *dropsy*, beginning in the lower extremities.

A formidable symptom, causing much inconvenience as well as alarm to the patient, is what he will term his constant "sighing," the Cheyne-Stokes breathing—"A pause in the breathing, a complete suspension of the respiratory acts for a period of time (during which breathing might occur several times in the normal manner), then the resumption of respiration very feebly and slowly, and a gradual and progressive increase in the number and depth of respirations until the maximum is reached, and then again a gradual and progressive diminution, in the same order, in the number and depth of the respirations, until another pause occurs"—the "oscillating respiration."

Concomitant symptoms are atheromatous change in the vessels, and the *arcus senilis*.

Palpation. Weak cardiac impulse.

Percussion. Not markedly changed unless preceded by enlargement of the heart.

Auscultation. First sound feeble, toneless, almost inaudible, the second sound being normal, unless changes in the valves are present.

Diagnosis. If aged persons, or those exposed to the causes, have feeble heart, associated with atheroma of the vessels and the *arcus senilis*, the diagnosis of fatty heart is almost positive. If dropsy occur, however, it is difficult to distinguish from dilatation of the heart.

Prognosis. Incurable, the affection pursuing a more or less chronic course. Life may be prolonged at times by treatment, but death finally results from exhaustion, or suddenly, from cardiac paralysis or rupture of the heart.

Treatment. Palliative. Generous diet, very moderate exercise, *stimulants*, *oleum morrhue*, and the "triple elixirs,"—*elixir ferri*, *quininæ et strychninæ*.

To sustain the cardiac action, *caffaina* or *morphina* in small doses, or hypodermatically for the so-called cardiac asthma. Digitalis is contra-indicated in advanced cases.

VALVULAR DISEASES OF THE HEART.

Definition. Alterations in the cardiac valves or orifices, rendering the former incapable of properly closing the latter, or causing the latter to interrupt the blood current in its normal movement.

The lesions are of two kinds, to wit : *obstructive* and *regurgitant*.

A *regurgitant lesion*, termed also *insufficiency*, is such change in the valves as to permit a portion of the blood to flow backward instead of onward, the true direction of the blood current.

An *obstructive lesion*, termed also *stenosis*, is a narrowing of the orifice, thereby obstructing the passage of the blood.

Varieties. I. Mitral regurgitation. II. Aortic regurgitation. III. Tricuspid regurgitation. IV. Pulmonic regurgitation. V. Mitral obstruction. VI. Aortic obstruction. VII. Tricuspid obstruction. VIII. Pulmonic obstruction.

Causes. In the young, usually the result of endocarditis, and generally affecting the mitral orifice or valves ; in the elderly, chronic endocarditis or atheromatous degeneration, most commonly affecting the aortic orifice or valves.

Prof. Da Costa has clearly established the production of aortic disease in early life by overwork and strain of the heart. Syphilis ; dilatation of the heart ; atrophy or contraction of the valves, and congenital malformations.

MITRAL REGURGITATION.

Pathological Anatomy. The most common conditions observed are more or less contraction and narrowing of the tongues of the valves, with irregular thickening and rigidity ; atheroma or calcification of the segments ; laceration of one or more segments ; adhesion of one or more segments to the inner surface of the ventricle ; rupture of the *chordæ tendineæ*, and also contraction and hardening of the *musculi papillares*.

As a result of the regurgitation of the blood into the left auricle, there is dilated hypertrophy.

Symptoms. Insufficiency of the mitral valves soon leads to car-

diac hypertrophy to compensate for the diminished amount of blood sent onward by the ventricular systole. When the "compensation ruptures" occur, *præcordial distress, cough, dyspnœa, feeble, soft, rapid, irregular pulse*; finally pulmonary congestion, œdematous limbs, the abdominal cavity filled, liver congested, urine scanty and albuminous, the patient dying "drowned in his own fluid."

Inspection. Cardiac impulse lower than normal, the heart being enlarged.

Palpation. Early, forcible and diffused impulse; later, feeble diffused impulse.

Percussion. Transverse and vertical cardiac dullness increased.

Auscultation. Systolic blowing or churning murmur, audible in the mitral area, propagated to the apex, left axilla and under the angle of the scapula, either occurring with or taking the place of the *first sound* of the heart; the second sound markedly accentuated.

Prognosis. So long as the compensating hypertrophy can be maintained the prognosis is not unfavorable; when dilatation supervenes, however, the patient soon perishes, either from congestion of the lungs or dropsy and exhaustion.

AORTIC REGURGITATION.

Pathological Anatomy. The valves or segments adhere to the walls of the aorta, or a segment is lacerated or may be perforated, or, more commonly, the segments are shrunk, deformed and rigid, permitting the regurgitation of the blood. These deficiencies in the valves are usually associated with more or less narrowing of the orifices.

The cardiac muscle rapidly hypertrophies, its cavity enlarging—"dilated hypertrophy."

Symptoms. Those of marked hypertrophy, to wit: forcible cardiac action, headache, tinnitus aurium, congestion of the face and eyes, with *pulsating vessels*, even small ones pulsating that before were not visible to the eye; pulsations of the retinal vessels can be recognized with the ophthalmoscope; the *receding pulse*, which is particularly characteristic—forcible impulse but rapidly declining, called "water-hammer" pulse; also, the "Corrigan pulse."

When "compensation ruptures," dyspnœa, cough, hepatic enlargement, congestion of the kidneys, with scanty, albuminous urine, ascites and dropsy. If mitral insufficiency is now superadded, general venous stasis and death rapidly occur.

Inspection. Forcible cardiac impulse.

Palpation. Strong, full cardiac impulse.

Percussion. Cardiac dullness increased transversely and vertically.

Auscultation. *First sound*, forcible; *second sound*, replaced or associated with a *churning, rushing or blowing murmur* of low pitch, distinct at the second right costal cartilage, but most distinct at the junction of the sternum and the fourth left costal cartilage, transmitted downward toward and below the apex.

Prognosis. The one valvular disease most likely to occasion sudden death; still, so long as the compensating hypertrophy remains intact, compatible with quite an active life.

TRICUSPID REGURGITATION.

Pathological Anatomy. This form of valvular insufficiency is either associated with right-sided cardiac dilatation from pulmonary obstruction, or is the result of mitral disease.

The tricuspid orifice is dilated in the majority of cases; occasionally the segments of the valves are contracted or adherent to the ventricle.

Symptoms. Venous stasis with its various consequences, and especially *pulsation of the jugular*, synchronous with the cardiac movement, and finally general venous pulsation, especially of the liver, pulmonary congestion, engorgement of the kidneys and dropsy. These symptoms are superadded to those of the affections with which tricuspid insufficiency is always associated.

Inspection. Diffused, wavy, cardiac impulse; jugular pulsation synchronous with the cardiac movement, uninfluenced by respiration, also more or less prominent hepatic pulsation.

Palpation. The cardiac impulse extended, but feeble.

Percussion. Dullness on percussion, extending to the right and below the sternum.

Auscultation. The first sound is accompanied by a blowing murmur most intense at the junction of the fourth and fifth ribs with the sternum, distinct over the xiphoid appendix, becoming feeble or lost in the left axillary region; often associated, however, with a mitral systolic murmur.

PULMONIC REGURGITATION.

Pathological Anatomy. Insufficiency of the pulmonary valves is of rare occurrence, but when present the changes correspond more or less to those described for aortic regurgitation.

Symptoms. Those of dilatation of the right side of the heart and consequent pulmonary congestion, to wit: dyspnoea, deficient aeration of the blood, and cyanosis, distention of the superficial vessels, palpitation of the heart, præcordial distress, sudden suffocative attacks and dropsy.

Percussion. The cardiac dullness extending to the right of the sternum.

Auscultation. A loud blowing murmur associated with the second sound of the heart, most distinct at the junction of the third left costal cartilage and the sternum.

Prognosis. Death results, sooner or later, from dropsy and exhaustion.

MITRAL OBSTRUCTION.

Pathological Anatomy. Mitral stenosis is caused by deposits around the orifice, the result of endocarditis, or else the segments of the valves are "glued together by their margins," leaving but a funnel-shaped opening, the so-called "button-hole" mitral valve. Vegetations on the valves lead to more or less obstruction of the blood current.

Symptoms. Hypertrophy of the left auricle results from obstruction at the mitral orifice, the symptoms of stenosis being unobservable until the "compensation ruptures," when occur *irregular*, small and *feeble pulse*, *dyspnoea*, *cough*, bronchorrhœa the result of bronchial congestion; dilatation of the right side of the heart, soon leading to general venous stasis, dropsy and death.

Inspection. Normal until auricular hypertrophy, when an undulatory impulse is observed over the left auricle.

Palpation. When cardiac dilatation occurs, a diffused, feeble and irregular cardiac impulse is felt near the xiphoid appendix.

Auscultation. First sound normal in character but often irregular in rhythm. The second sound normal. A blowing, sometimes rasping, sound is heard, immediately *after the second sound* of the heart ceases, and immediately *before the first sound* begins—a *pre-systolic murmur*, heard most distinctly in the mitral area, lessening in

intensity toward the cardiac base. The cardiac sounds are all more or less enfeebled if cardiac dilatation occur.

Prognosis. The prognosis is controlled by the hypertrophy. Under favorable circumstances mitral stenosis is compatible with a long and rather active life.

AORTIC OBSTRUCTION.

Pathological Anatomy. Stenosis of the aortic orifice depends upon the projection of the valves inward, and their becoming rigid and thickened, or atheromatous or calcareous, so that they cannot be pressed back by the blood, but remain constantly in the current of the circulation. Occasionally the valves are covered with fibrinous masses, the opening into the artery being thus more or less completely closed, or the segments may be adherent by their lateral surfaces, leaving a central opening, which may be so contracted as to only permit the passage of the smallest article.

Symptoms. Hypertrophy of the left ventricle rapidly supervenes upon aortic stenosis. The *pulse* is *small*, slow and hard. The supply of blood to the brain is insufficient in many cases, and hence attacks of *vertigo*, *syncope* or slight epileptiform seizures occur; finally, dilatation of the left ventricle and incompetence of the mitral valve result, with subsequent pulmonary congestion, dyspnoea and general venous stasis, the pulse soft and feeble.

Palpation. Lowered cardiac impulse, strong in the early stage, feeble when dilatation occurs.

Percussion. The cardiac dullness is increased vertically, the transverse dullness being slightly affected.

Auscultation. The first sound replaced or associated with a *harsh, rasping sound*, whistling at times, having its greatest intensity at the junction of the second right costal cartilage with the sternum, transmitted along the vessels; the murmur may sometimes be heard a short distance from the patient.

Usually aortic stenosis is associated with more or less aortic regurgitation, whence a *double murmur* occurs, having its greatest intensity at the base of the heart, the so-called see-saw murmur.

Prognosis. So long as compensation is maintained the symptoms of aortic stenosis are *nil*. When the compensation is ruptured, the usual symptoms of dilatation, venous stasis and dropsy soon follow.

TRICUSPID OBSTRUCTION.

This condition is one of the rarest affections of the heart, and if it ever does occur with or following an attack of endocarditis, the anatomical changes are similar to those of mitral obstruction. This condition soon leads to auricular dilatation; venous stasis rapidly supervenes, associated with venous pulsations similar to those described when speaking of tricuspid regurgitation.

PULMONIC OBSTRUCTION.

Pathological Anatomy. Always a congenital malady, the changes consisting in "constriction of the pulmonary artery, unclosed foramen ovale, unclosed ductus Botalli, stricture at the ductus Botalli, with hypertrophy of the right cavity and frequent association with tuberculosis of the lungs,"

Hypertrophy of the right ventricle may ensue, the walls becoming almost as thick as those upon the left side.

Those in whom these congenital defects in the cardiac structure occur are otherwise weak, develop slowly, have flabby tissues, soft bones and seem poorly nourished.

Symptoms. The hypertrophy which often ensues may keep life apparently comfortable for some time, but sooner or later "compensation ruptures," when cough, dyspnœa, cyanosis and death occur.

Prognosis. The duration of these congenital affections is short, usually from a few days to a few months; although several well authenticated cases record a much longer duration.

DIAGNOSIS OF VALVULAR DISEASES.

In making a differential diagnosis between the various forms of valvular diseases of the heart, strict attention must be paid to the points of greatest intensity at which the several murmurs are heard.

A *murmur* occurring with or taking the place of the *first sound* of the heart—the ventricular systole—heard most distinctly at the apex, transmitted to the left axilla, and to the inferior angle of the scapula, signifies mitral regurgitation—a *mitral systolic murmur*.

A *murmur* occurring with or taking the place of the *first sound* of the heart, with its point of greatest intensity at the xiphoid appendix, signifies regurgitation at the tricuspid orifice—*tricuspid systolic murmur*.

A *murmur* heard with the *first sound* of the heart, high-pitched,

rasping or grating in character, with its point of intensity greatest at the second right costal cartilage, signifies obstruction at the aortic orifice—an *aortic systolic murmur*.

A *murmur* heard with the *first sound* of the heart, soft in character, with its point of intensity most distinct at the junction of the third left costal cartilage with the sternum, signifies obstruction at the pulmonary orifice—a *pulmonic systolic murmur*.

A *murmur* occurring immediately after the *second sound* of the heart, and immediately before the beginning of the first sound of the heart signifies obstruction at the mitral orifice—a *presystolic mitral murmur*.

A *murmur* heard with or taking the place of the *second sound* of the heart, most distinct at the second costal cartilage, to the right of the sternum, and well transmitted toward the apex or below, signifies insufficiency or regurgitation at the aortic orifice—an *aortic regurgitant or diastolic murmur*.

Although eight distinct valvular murmurs have been described as occurring in the heart, those on the right side are of rare occurrence, and hence of little clinical importance.

If a *murmur* be heard with the *first sound* of the heart, it is almost certainly *aortic obstructive or mitral regurgitant*; and if heard with the *second sound*, it is probably *aortic regurgitant*. A *presystolic mitral murmur* is also of comparatively rare occurrence, the force with which the blood passes from the left auricle into the left ventricle being, under ordinary circumstances, insufficient to excite sonorous vibrations.

Functional or anæmic murmurs may be confounded with the various forms of valvular disease of the heart. The chief points of distinction between them are, that an anæmic murmur, which is always heard at the base of the heart, is always systolic in time, not transmitted away from the heart, and is soft in character, low in pitch, and of variable intensity, now being heard, now entirely absent.

Treatment. There is no special plan of treatment for each form of valvular disease. The important point to bear in mind is that they are associated either with *cardiac hypertrophy or dilatation*, and the treatment, if any at all is required, is directed toward this secondary condition. If compensation be complete, attention to the condition of the bowels, kidneys and digestion, with some general directions as to exercise, is all that is required.

If the hypertrophy become marked and excessive, it is best controlled by either *aconitum* or *veratrum viride*.

If dilatation have occurred, the heart weak and feeble, the circulation impeded, and venous stasis has followed, *digitalis*, with more or less active purgation, are indicated.

PALPITATION OF THE HEART.

Synonym. Irritable heart.

Definition. A functional disturbance of the heart; characterized by increasing frequency of its movements and more or less irregularity of the rhythm, with a strong tendency toward hypertrophy.

Causes. Over-exertion, "the heart strain" of Da Costa; dyspepsia; uterine diseases; excesses in tea, coffee, tobacco, alcohol or venery; moral and emotional causes, grief, anxiety and fear.

Symptoms. Usually palpitation of the heart has a sudden onset after some one of the causes mentioned, *præcordial oppression or pain, rapid, tumultuous beating*, the impulse being visible through the patient's clothing, *dyspnœa, anxiety*, and a sense of *choking or fullness in the throat*, the recumbent position impossible, *vertigo*, faintness, flashes of light, the pulse full and strong or feeble, the *face flushed or pale*, the patient having a feeling of anxiety with a sense of *impending danger* and a fear of sudden death. These attacks are paroxysmal, lasting from a few moments to several hours, or a day, the patient often voiding a large quantity of limpid urine after the paroxysm has subsided, when there is a strong tendency to sleep.

Diagnosis. Irritability of the heart is differentiated from the various forms of cardiac disease by the absence of all the physical signs mentioned as occurring in those conditions.

Prognosis. If early and properly treated, favorable.

Treatment. The first point in the treatment of irritability of the heart is to remove the cause; the next, to prevent the recurrence of the attacks of palpitation.

The majority of cases do well by a combination of *digitalis* and *belladonna*. Permanent relief is often afforded by a combination of *potassii bromidum* and *veratrum viride*. *Chloral* is also useful. If the patient be anæmic, the author has had excellent results follow the prolonged use of the *elixir ferri, quininæ et strychninæ*. Locally, *emplastrum belladonnæ* to the præcordium affords relief.

ANGINA PECTORIS.

Synonym. Neuralgia of the heart.

Definition. Paroxysms in which there occur sharp cardiac pains, extending usually into the left shoulder and down the left arm, accompanied by a feeling of constriction of the thorax and a strong sense of impending death.

Causes. Often hereditary; associated with chronic cardiac changes, as diseases of the coronary arteries or calcification of the valves; the excessive use of tobacco; according to Trousseau, it is a form of masked epilepsy, and may alternate with true epileptic attacks; often associated with hysteria.

Pathological Anatomy. "The pathological changes which stand in a causative relation to the attacks are those of the cardiac plexus of the phrenic and of the pneumogastric nerves. Pressure of enlarged lymphatics, inflammation of parts of the cardiac plexus, with changes in the coronary artery, seem to be most constant."

Symptoms. A paroxysmal affection, the attacks occurring irregularly; in the interval entire absence of symptoms.

"The patient suddenly sits up in his bed; with a cry of horror indicates the sense of pain at the præcordium. This pain is of great intensity, but is of a cold and sickening character; the chest is fixed, the breathing quickened, and the hand placed over the epigastrium finds that the heart's action is slight and enfeebled. The face wears a look of horror, pale and slightly leadened; a cold sweat breaks out upon the forehead; worse than the pain is the feeling of fearful sickening and depression. The poor patient gasps, 'I shall die! I shall die!' and sometimes his short but concentrated sufferings in a few moments end in death."

The unpleasant sensations of these patients during an attack, and the nervous disorder associated with it, slowly bring about a mental change. They are depressed and gloomy, sometimes suicidal, often developing epilepsy.

Diagnosis. The points to be remembered are that the attacks are always paroxysmal, the patient having a sense of coldness, and frequently a cold sweat, the heart's action not increased, the chest fixed and the breathing slow.

Prognosis. Unfavorable, the patient, sooner or later, either succumbing during a paroxysm or from exhaustion, the result of the cardiac changes.

Treatment. As far as possible attempt to remove the cause.

Prompt relief follows the use of *amyl nitris*, ℥iij, inhaled at the instant, or *morphinæ sulphas*, gr. $\frac{1}{6}$ – $\frac{1}{4}$, to which may be added with advantage *atropinæ sulphas*, gr. $\frac{1}{120}$, hypodermatically. To prevent the paroxysms, *liquor potassii arsenitis*, ℥v, three times a day, also *ol. morrhuae*, or *hypophosphites*, and *elixir ferri, quininæ et strychninæ*.

DISEASES OF THE NERVOUS SYSTEM.

CONGESTION OF THE BRAIN.

Synonyms. Cerebral hyperæmia; cerebral congestion.

Definition. An abnormal fullness of the vessels of the brain; *active*, when arterial fullness; *passive*, when venous fullness; characterized by headache, vertigo, disorders of the special senses, and if the hyperæmia be decided, convulsions.

Causes. *Active.* Increased cardiac action, the result of hypertrophy of the left ventricle; general plethora; excesses in eating and drinking; alcoholism; sunstroke; prolonged mental labor; diminished amount of arterial blood in other parts, the result of the compression of the abdominal aorta; ligation of a large artery, and the suppression of an habitual bleeding hemorrhoid are examples.

Passive. Dilatation of the right heart; pressure upon the veins returning the cerebral blood.

Pathological Anatomy. The *post-mortem* appearances are, overloading of the venous sinuses and of the meningeal vessels, including the finer branches; the *pia mater* appears vascular and opaque; the *gray matter* of the convolutions unduly red; the *convolutions* may be compressed and the *ventricles* contracted, with the displacement of a corresponding amount of cerebro-spinal fluid.

Long-continued or repeated congestions lead to enlargement and tortuosity of all the vessels, a moist and slimy condition (œdema) of the cerebral substance, and an increase in the sub-arachnoid fluid.

Symptoms. "Rush of blood to the head" may be gradual or sudden in its onset, the symptoms aggravated by the recumbent position. *Headache* with paroxysmal neuralgic darts, *disorders of vision and hearing*, buzzing in the ears and sparks before the eyes,

contracted pupils, *vertigo*, *blunted intellect*, inability to concentrate the mind, *irritable temper* and curious *hallucinations*. The *face* is *red*, the *eyes congested*, and the *carotids pulsating*. The *sleep* is disturbed by *dreams* and *jerkings of the limbs*. In children *convulsions* occur. If the attack be sudden (apoplectiform), *sudden unconsciousness* with *muscular relaxation* occur.

Prognosis. *Mild cases* terminate favorably in a few hours to a day or two, but show a strong tendency to recur. *Severe cases* (apoplectiform) may terminate in health, but usually foretell cerebral hemorrhage.

The *passive* form is controlled by the lesions giving rise to it.

Treatment. *Active form.* Remove the cause if possible. *Elevate the head* and apply *cold*, either cold cloths or the ice cap, at the same time warmth to the feet. *Leeches* to the mastoid, or *cups* to the neck, or in the *apoplectiform* variety *venesection*, to diminish the intracranial blood pressure; compression of the carotids, or ligatures about the thighs, have been recommended.

An active purgative is also indicated, to lessen the vascular tension.

In mild cases the application of *cold* and *potassii bromidum*, gr. xxx—xl, repeated, controls the congestion; *extractum ergotæ fluidum* is often beneficial; in more severe cases any or all of the above-mentioned means, together with full doses of *tinctura veratri viridis* or *tinctura aconiti*, may be needed.

Passive form. Becomes a part of the treatment producing the hyperæmia.

CEREBRAL ANÆMIA.

Definition. An abnormal decrease in the quantity of blood in the cerebral vessels; *general*, when the diminished supply includes all the vessels; *partial*, when the diminished supply is limited in area; characterized by pallor, headache, vertigo, some loss of power, and, rarely, convulsions.

Causes. *Partial* cerebral anæmia results from obstruction of a vessel, from embolism or thrombosis. *General* cerebral anæmia results from hemorrhages, wasting diseases, sudden shock, feeble cardiac action and general anæmia.

Pathological Anatomy. The cerebral vessels contain less blood than normal; the brain is pale and milky in color, and on

transverse section there are no bloody points; the ventricles and perivascular lymph spaces are well filled with fluid.

In *partial* anæmia the local conditions differ somewhat from the above.

Symptoms. *General*: *headache*, relieved by the recumbent position; *vertigo*, aggravated by exertion; general *pallor* and anæmia, with attacks of *fainting*; when the general cerebral anæmia is sudden and decided, convulsions occur.

Partial anæmia; sudden loss of power, of limited muscular area, gradually returning to the normal condition.

Prognosis. Favorable in all cases save those the result of severe and repeated hemorrhages.

Treatment. Regulated *nourishment*, with *stimulants*. A certain number of hours daily in the recumbent position is of advantage. When a tendency to attacks or *swooning* exists, stimulants or even the cautious inhalation of *amyl nitris* are indicated. To improve the quantity or quality of the blood—

R.	Tinct. ferri chlor.....	℥xv	
	Acid. phosph. dil.....	℥v	
	Liq. arsenici chloridi.....	℥iij	
	Syr. limonis.....	℥xx	
	Syr. zingiberis,.....	q. s. ad	℥ij. M.

SIG.—Every six hours, well diluted.

Or—

R.	Extracti erythroxyli cocoæ fld.....	f℥ss	
	Vini albi fort.....	f℥ss.	M.

SIG.—One hour after meals.

CEREBRAL THROMBOSIS AND EMBOLISM.

Synonyms. Partial cerebral anæmia; occlusion of cerebral vessels; cerebral apoplexy (?).

Definition. The occlusion of a cerebral vessel, from the formation of a *thrombus*, or the presence of an *embolus*, thus causing *anæmia* of some portion of the brain; characterized by the gradual—when the result of thrombosis, and the sudden, when due to embolism—development of headache, vertigo, disorders of intelligence, with more or less complete insensibility and paralysis.

Causes. *Thrombosis*, or the formation of a clot in the vessel—an *ante-mortem* coagulation—is almost always the result of chronic

endarteritis, together with a slowing and weakening of the blood current.

Emboli usually results from an endocarditis—cardiac emboli; small particles of the exudation are carried into the circulation and are deposited in the brain. Emboli may also be derived from aortic aneurism, or syphiloma of the great vessels.

Pathological Anatomy. The cerebral arteries may be obstructed by emboli or thrombi; the cerebral veins and sinuses by thrombi only. The changes in the cerebral tissue are those of anæmia of the part or parts supplied by the occluded vessels. The subsequent changes depend upon the anatomy of the vessels. If the obstructed artery has anastomoses, the collateral circulation is soon established and the brain tissue assumes its normal condition. If, on the other hand, the occluded vessel be one of “Cohnheim’s terminal arteries”—arteries without anastomoses—the blood in the whole extent of the occluded vessel coagulates, thus preventing the backward flow of blood from the surrounding capillaries and so obstructing collateral circulation, whence the anæmic tissue dies or undergoes *necrobiosis*, followed by yellowish-white softening; or, if the vessel beyond the seat of the occlusion remains pervious, blood flows back through the capillaries from the nearest artery or vein; the parts that a short time before were bloodless now become deeply engorged, the succeeding changes in the vessels permitting *diapedesis* of the red blood globules; the tissues which are undergoing disintegration are colored by the red globules, causing the appearances entitled “red softening,” which after some weeks becomes “yellow softening,” finally changing to “white softening,” when there is a milky, or rather creamy, fluid mixed with masses or particles of broken-down nerve elements.

The vessel most commonly occluded is the *left Sylvian artery*, which sends branches to the second and third frontal convolutions, the anterior and superior portions of the three temporal convolutions, the island of Reil, the parietal convolutions, part of the external and all of the internal capsule, the lenticular nucleus, and most of the corpus striatum.

Symptoms. Two distinct modes of onset; gradual, when the result of thrombosis; sudden or apoplectic, when due to embolism.

Cerebral thrombosis. Most common in the aged. Persistent *headache* and *vertigo*, at one time severe and at another mild. Next, alterations of character; *irritable*, *morose* and *despondent*, with periods

of *absent-mindedness*, *disorders of vision*, and *impairment of memory*, *speech* becoming *hesitating* and mumbling. *Impaired locomotion*, the result of the vertigo, and of *muscular weakness* and *trembling*, followed sooner or later by *hemiplegia*, which may be preceded by sudden insensibility or occur gradually, the symptoms slowly proceeding to *senile dementia* and death from exhaustion ; or rarely, the symptoms are not so grave, and partial or complete recovery occurs after the hemiplegia, from establishment of the "collateral circulation."

Cerebral embolism. The symptoms are sudden, but either mild or grave in character.

Mild variety ; sudden and severe *vertigo*, *confusion of mind*, *muscular twitchings*, usually one-sided, and *vomiting*, followed by *hemiplegia*, most frequently of the right side. After some weeks or months the paralysis usually disappears and recovery is complete.

Grave or apoplectic variety. *Sudden headache*, *vertigo*, *flushing* or *pallor* of the *face*, or the patient may utter a *sharp cry*, fall to the ground with *sudden unconsciousness* and *complete muscular resolution*, followed by death, or a gradual return of consciousness with *hemiplegia*, which is generally right-sided, remaining for several weeks or months, or is persistent, the *mind remaining normal* or *enfeebled* and the *emotional nature* highly excited and the *reason* and *judgment clouded*, continuing thus for years, or gradually developing into *dementia*, exhaustion and death.

Duration. *Thrombosis*, essentially an affection of the elderly, has a chronic course. Months or years may be occupied with the various symptoms until the phenomena of senile dementia develop.

Embolism is of sudden onset and may be followed by a rapid recovery.

Diagnosis. *Thrombosis* is associated with changes in the vessels, the *arcus senilis* and other evidences of senile degeneration.

Embolism may be mistaken for cerebral apoplexy, and while a positive differentiation cannot always be made, the chief points will be considered when discussing that affection.

Prognosis. *Thrombosis* is a permanent and progressive condition in the majority of instances. Recovery is a rare termination.

Embolism may be followed by a perfect recovery. Usually, however, some evidences of the plugging remain permanently. Death may be the result within a day or two, from the plugging of a large

vessel, the patient never emerging from the coma. In other cases the patient arouses from the coma, the hemiplegia with aphasia persisting, and the case pursues the usual course of localized cerebral softening.

Treatment. Perfect rest for some time after the attack, a plain but nutritious diet, and attention to the various excreta.

Prof. Bartholow "has had remarkable results from the following plan of treatment in thrombosis:" *Ammonii carbonas*, gr. x, with *ammonii iodidi*, gr. v, three times a day, continued for several months, "the object being dual—to increase the action of the heart and arteries and to effect a solution of thrombi forming by maintaining the alkalinity of the blood."

In the aged, presenting indications of degeneration, much benefit results from the use of—

R.	Liquor potassii arsenitis.....	ʒiij-v	
	Syr. calcii lacto-phosphat	ʒj-ij.	M.
SIG.—After meals.			

It may be combined with *oleum morrhuae* with decided advantage.

For *embolism*, the immediate and persistent use of the following may dissolve the plug:—

R.	Ammonii carbonat.....	gr. v	
	Liquor ammonii acetatis.....	fʒj.	M.
SIG.—Three or four times daily.			

"In a month or two a very light galvanic current (from two cups) may be passed through the brain in both directions." (Bartholow.)

CEREBRAL HEMORRHAGE.

Synonym. Apoplexy.

Definition. The sudden rupture of a cerebral vessel and escape of blood into the cerebral tissue, causing pressure and more or less destruction of the brain substance; characterized by sudden unconsciousness, irregular, noisy respiration and complete muscular relaxation.

Causes. Rare under forty years of age. The principal cause is disease of the vessels—a periarteritis, resulting in miliary aneurisms, and especially if associated with cardiac hypertrophy; hereditary tendency; Bright's disease; syphilis; gout. More frequent in the spring and autumn.

Pathological Anatomy. The most common locations of cerebral hemorrhage are the *corpus striatum* and *thalamus opticus*; less common the *anterior* and *middle lobes* and the *cerebellum*; next in frequency the *pons* and *medulla oblongata*; and rarely on the *convexity* of the brain, termed *meningeal* hemorrhage.

When the hemorrhage is large, the blood may break into the ventricles and pass by the *iter* from the third to the fourth ventricle.

A recent clot is dark in color, and in consistency a soft, grumous mass, composed of coagulated blood and brain substance in varying proportions, at whose centre is the opening into the ruptured vessel. The *clot* excites inflammation around it, resulting in its being encysted, by the development of new connective tissue from the neuroglia, and then gradually absorbed, leaving a cicatrix, or the brain tissue around the clot softens and degenerates—localized softening.

Symptoms. Two modes of onset, to wit: with and without *prodromes* or “warnings.”

Prodromes. Headache, vertigo, transient deafness or blindness, sensations of numbness of the extremities, with local palsies, together with the constant *dread of an attack*.

The *attack* begins with *vomiting*, followed by either partial or complete *insensibility*; *respiration slow, irregular and noisy*; during the inspiration the paralyzed cheek is drawn in, and puffed out in expiration; *pulse* slow and full; *pupils* uninfluenced by light, the *face* flushed, the *eyes* congested and the *carotids* throbbing; the *temperature* declines below the norm, a degree or two.

The *muscular system* is profoundly relaxed, and the *reflex movements* are abolished. The head and eyes *deviate*, in many cases, *toward* the affected side in the brain *or from* the paralyzed side.

If the unconsciousness continues longer than twenty-four hours, death is the usual termination, preceded by pale face, irregular and rapid pulse and respiration, and rise of temperature.

Reaction obtains in from a half to three hours, consciousness returning, reflex excitability reviving, associated with headache, confusion of mind, and more or less *paralysis* of motion and sensibility of one side of the body termed—*hemiplegia*.

The *electro-excitability* of the paralyzed parts is preserved.

Restoration may be delayed by inflammatory symptoms, the temperature rising to 101°–104° F., with tonic contractions (*early rigidity*) of the paralyzed muscles and severe neuralgic pains.

Sequelæ. *Paralysis* of the muscles of the face, tongue, body and extremities of one side, *opposite* to the location of the hemorrhage, termed *unilateral* paralysis or *right* or *left hemiplegia*.

Paralysis of both sides of the body, due to simultaneous hemorrhage on *both* sides, termed *bilateral hemiplegia*.

Paralysis of *one* side of the face and the extremities of the opposite side, due to hemorrhage into the *pons varolii*, termed *alternating* or *crossed paralysis*.

Occasionally *tonic contractions* occur in muscles long paralyzed, termed *late rigidity*, and is evidence of a *secondary degeneration* of the nerve fibres.

Choreic movements in paralyzed muscles are termed *post-hemiplegic chorea*, due, according to Charcot, to changes in the motor centres.

The *mental powers* are always more or less permanently impaired, the patient irritable and emotional, and the same holds good concerning the *memory*.

Diagnosis. *Insensibility from drink* differs from apoplexy in the following points, to wit: insensibility is not so complete, no drawing in and puffing out of one cheek with respiration, the pulse frequent instead of slow, the pupils influenced by light; upon raising both legs no difference is apparent on allowing them to drop; the eyes and head are not turned to one side, and lastly, the condition is ameliorated on the inhalation of ammonia.

Opium poisoning differs from apoplexy by the gradual approach of the coma, and that the patient can be momentarily aroused, and also by the absence of the heavy stertor of apoplexy.

Uræmia causes a coma that closely resembles apoplexy. A history of Bright's disease at once clears up the case; again, uræmic coma is always preceded by convulsions, and has a continued depressed temperature.

Cerebral embolism cannot always be differentiated from apoplexy. We may suspect cerebral plugging, if the patient be young; if he be laboring under acute, subacute or chronic valvular trouble; if, within brief periods, several incomplete attacks have occurred before a complete comatose condition obtains; or, if hemiplegia results with passing or slight unconsciousness; or, if the phenomena are sooner or later followed by cerebral softening, as embolism and thrombosis are the most common causes of softening.

Syncope or a fainting-fit is of sudden onset, but being due to a failure of the circulation, the pulse is feeble, the face pale, the respiration quiet, and the duration of unconsciousness short, all the very opposite of an apoplectic attack.

Prognosis. If the patient survive the immediate effects of a cerebral hemorrhage, he is always in danger of a new attack, since the causes of the original attack still remain. Another attack or two is the usual course, a fatal termination ultimately occurring.

The *hemiplegia* is uncertain ; a partial recovery may occur within a few months, or it may continue for years.

Treatment. If there are prodromal indications, the most prompt means of reducing the intra-cranial blood pressure is by *venesection*, followed by a brisk purgative ; if the patient be weak, however, *leeches* to the mastoid, and *potassii bromidum*, gr. xl-lx, may be substituted.

For the *attack*, loosen clothing, elevate the head, remove constrictions, place in a cool room, have perfect quiet, and at once *venesection*, *cold to head*, *mustard foot bath*, and *oleum tiglii*, gtt. j-iiij, *glycerinum*, gtt. xv, placed on back of tongue ; if the pulse be full and strong, when consciousness is regained, either *tinctura veratri viride* or *tinctura aconiti* is indicated.

If during the attack the *face be pallid* and the *pulse irregular*, the patient is prostrated by the *shock* and *stimulants* and *digitalis* are indicated, with, perhaps, *leeches* to the mastoid and an *enema* of *terebinthina*.

For the secondary fever, either *tinctura aconiti* or *tinctura veratri viride* ; for the headache and delirium, *camphoræ bromidum*.

For aiding the *absorption* of the clot, keep the secretions acting, a good diet and a course of *potassii iodidum* or *hydrargyri chloridum corrosivum*, alternated with—

R. Liq. potassii arsenit..... gtt. v
 Syr. calcii lacto-phosph..... fʒ ij.
 Three times a day.

After two or three months a weak *galvanic current* applied directly to the brain, by placing an electrode on each mastoid process, promotes absorption.

For the *paralyzed muscles*, the *faradic current* applied by placing one electrode over or near the nerve innervating the muscle and the other over its belly, acts as a tonic, preventing wasting ; it is assisted by hypodermatic injections of *strychninæ sulph.*, gr. $\frac{1}{50}$, three times a week.

ACUTE MENINGITIS.

Synonyms. Cerebral fever; arachnitis.

Definition. An acute inflammation of the cerebral pia mater and arachnoid membranes; characterized by headache, chill, fever, delirium, and followed by symptoms of general collapse.

Causes. Cerebral overwork; prolonged wakefulness; acute alcoholism; exposure to the sun; disease of the internal ear; erysipelas; secondary to diseases of serous membranes, and the continued and eruptive fevers. Most frequent in early adult life and in young children, and in males rather than females.

Pathological Anatomy. The inflammatory changes may be limited either to the *convexity* or to the *base* of the *brain*.

Intense *hyperæmia* of both membranes, followed by a purulent and fibrinous *exudation*. The ventricles may be filled with fluid, compressing and flattening the convolutions.

Symptoms. Vary according to the stages:—

Prodromes; headache, vertigo, cerebral vomiting, more or less feverishness, continuing from a few hours to one or two days, when occurs the

Stage of Invasion; onset sudden, with chill, high fever, 103°–104°, pulse 100–120, face flushed, with congested eyes, headache, ringing in the ears, photophobia, vertigo, the nausea aggravated, and projectile vomiting.

Stage of Excitation; general sensibility of the body increased, sensitiveness to light, and acuteness of hearing, delirium furious, often resembling insanity, continual jerking of the limbs, oscillations of the eyeballs, twitching of the muscles of the face, followed by powerful contractions of the flexor muscles, even to the extent of opisthotonus, and in children convulsions. Duration, from one day to a week or two.

Stage of Depression or Collapse; the patient gradually becomes more quiet; the delirium subsides, as well as the muscular agitation; somnolence occurs, passing into coma, at times temporary consciousness, coma soon following again; pulse irregular and slow, fever less; various palsies, to wit: strabismus, ptosis, pupils uninfluenced by light, mouth drawn to one side, urine and fæces involuntarily discharged. Death following, either by convulsions or by deepening coma.

Diagnosis. *Cerebro-spinal fever* closely resembles acute meningitis, the points of distinction between which are the first named

occurring epidemically, associated with marked spinal symptoms and an eruption.

The cerebral symptoms of rheumatism are differentiated from idiopathic meningitis by the association of the joint trouble.

Cerebral symptoms of typhoid and typhus fever have a close resemblance to idiopathic meningitis, and are only determined by a study of the clinical history.

In *acute uræmia* the face is turgid, with puffiness of the eyelids; in meningitis the face is pale and no œdema; uræmia has decided albuminuria; it is slight or absent in meningitis; meningitis has chills followed by fever; uræmia has not.

In *delirium tremens* the delirium is a busy one, the patient imagining persons and animals around him, and is wild in his gestures and utterances; the temperature is normal or subnormal, the skin wet and clammy. In meningitis the delirium is mild but incoherent, the surface is hot and dry, and there is severe vomiting and headache.

Prognosis. Not very favorable. If recognized early and treated, a fair number of recoveries occur, but it usually leaves the patient subject to attacks of epilepsy or with a persistent headache.

Treatment. Must be prompt and energetic from the onset.

At once, active purgation by *oleum tigllii*, gtt. ij, *glycerinum*, ℥ v, dropped on the tongue; and if the urinary secretion be scanty, *dry cups* or *digitalis poultices* over the kidneys.

In vigorous subjects a copious *venesection* or *leeches* applied behind the ears, to the temples, or the nuchal region, followed by the application of *cold* to the head, and that it may be thoroughly applied, the head should be shaven.

Control the active circulation by *aconitum* in small doses, frequently repeated, combined with *potassii bromidum*, gr. xx-xl. The cerebral circulation may be markedly influenced by compression of the carotids. *Ergota* is of service in some cases.

The apartment should be cool, the air pure, the patient's head elevated. The diet should be nutritious but easy of assimilation.

The secretions must be carefully attended to, the catheter being frequently used in the stage of collapse.

If the case show a disposition to linger, small doses of *hydrargyri chloridum mite* or *potassii iodidum* are of benefit.

Third stage: Free *stimulation*, nutritious food, *ferri iodidum* and flying *blisters*.

PACHYMENINGITIS.

Synonyms. Meningitis; hæmatoma of the dura mater.

Definition. Inflammation of the dura mater; when the external layer is primarily involved it is termed *pachymeningitis externa*; when the internal layer is primarily involved it is termed *pachymeningitis interna*.

Causes. Pachymeningitis externa is a surgical malady, excited by fractures, penetrating wounds, and other injuries of the skull.

Pachymeningitis interna is due to blows upon the head without injury to the skull. A predisposition may be created by chronic alcoholism, scurvy, Bright's disease and syphilis.

Pathological Anatomy. *Pachymeningitis interna.* Hyperæmia of the membrane, followed by an exudation which develops into a membranous new formation, containing a great number of vessels of considerable size but having very thin walls. Hemorrhages from these new vessels are of frequent occurrence, which increase the size and thickness of the neo-membrane.

The usual position of the neo-membrane or new formation is on the upper surface of the hemispheres, extending downward toward the occipital lobe. The changes in the adjacent portion of the brain are dependent on the size and thickness of the neo-membrane. Bartholow observed a case in which the "cyst" was half an inch in thickness at its thickest part, and it depressed the hemisphere correspondingly, the convolutions being flattened, the sulci almost obliterated, and the ventricle lessened one-half in size.

Symptoms. Very obscure; principally those of cerebral pressure. Cases of persistent *headache*, *vertigo*, *photophobia*, *anorexia*, *insomnia*, gradual *impairment of intellect* and *locomotion*, followed by *apoplectic attacks* and *paralysis*, in the aged, or in whom some one of the causes of the affection are present, inflammation of the dura mater may be suspected.

Diagnosis. Always problematical, as its symptoms are masked and indefinite.

Prognosis. Unfavorable. Death usually occurs within a few weeks after the onset.

Treatment. Symptomatic, as there is no cure for the disease, although *potassii iodidum* has been recommended.

TUBERCULAR MENINGITIS.

Synonyms. Basilar meningitis; acute hydrocephalus.

Definition. An inflammation of the membranes of the brain, more particularly the basal pia mater, attended with or due to the deposit of gray, miliary tubercle; characterized by gradual decline of the bodily and mental powers.

Causes. Most frequently occurs in children between two and six years of age, although numerous cases are reported occurring between the ages of twenty and thirty years; scrofulous diathesis; inherited diathesis. The "gelatinous children of albuminous parents," as the phrase goes, possess a special susceptibility to tubercular meningitis.

Pathological Anatomy. The deposition of tubercle usually occurs at the base of the brain.

Depositions of grayish-white granules, of a translucent, somewhat gelatinous appearance—miliary tubercle, are distributed along the vessels of the pia mater, resulting in inflammation and the exudation of lymph, with the consequent thickening and opacity of the membranes.

The cerebral tissue is not usually involved, although on section the lines indicative of blood vessels are very much increased in number. The ventricles are distended by a clear, or milky, or even bloody serum.

Tubercular deposits occur in the lungs, intestines, and, at times, in other organs.

The presence of the tubercles alone may give rise to no symptoms until the exudative products of the resultant inflammation develop.

Symptoms. The advent is either gradual and insidious, or with convulsions, in which cases the after progress is rapid.

Prodromes: the child grows irritable, with loss of appetite, loss of flesh, swollen abdomen, constipation alternating with diarrhœa, irregular attacks of feverishness, with attacks of grinding its teeth during sleep. Headache occurs, as shown by the child, even when at play, suddenly stopping and resting its head on its hand or on the floor. Duration of this stage is from one week to a month or two.

Stage of excitation: the onset is rather sudden, with obstinate vomiting, severe headache, convulsions, fever, 102° – 103° in the evening, falling to 99° in the morning, pulse soft and compressible, with irregular rhythm. On drawing the finger nail lightly over the surface

a red line results, "the cerebral stain" of Trousseau. The symptoms grow progressively worse with exaltation of the special and general senses: the least pinch or even touch causing exquisite pain; *spasmodic movements of the muscles*, with *contraction* and *rigidity*, at times *opisthotonus*. Duration of this stage is about two weeks.

Stage of depression: the result of the pressure of the exudation; the *pulse* slow and compressible with irregular rhythm; *temperature* depressed; tendency to *somnolence* alternating with quiet *delirium*, mental stupor, continual movement of the fingers, as in picking up objects; convulsions from time to time, strabismus, oscillation of the eyeballs, followed by intervals of wakefulness, when the headache is excruciating, causing the peculiar, unearthly shrill cry or shriek, "the hydrocephalic cry," associated with contraction of the muscles of the face, as if suffering were experienced; finally *collapse*, occurring with the "Cheyne-Stokes" respiration, the *coma* deepening, followed by death, *convulsions* often ending the scene. Duration, from a day or two to two weeks.

Diagnosis. *Acute meningitis* and tubercular meningitis have closely analogous symptoms during the stage of excitation, but the history and clinical course of the two maladies determine the diagnosis.

Prognosis. Unfavorable. Usual duration, three or four weeks after fully developed prodromes. If ushered in by convulsions the duration is shorter.

Treatment. Most unsatisfactory. No means of retarding the disease. Treat symptoms as they develop. Blisters, leeches, active purgation, pustulating ointments, *potassii iodidum* and *hydrargyrum*, are all useless.

If the hereditary tendency be marked, nutritious food, *oleum morrhue*, *iodum* and *quinina* may somewhat delay the development of the affection.

ACUTE HYDROCEPHALUS.

Synonyms. Acquired hydrocephalus; serous apoplexy.

Definition. Strictly speaking, *hydrocephalus* signifies water in the brain; but it is here restricted to the presence of a serous fluid in the arachnoid spaces, in the pia mater, in the ventricles, and in the brain substance (œdema); characterized by the more or less sudden development of cerebral excitation, followed by depression and usually death.

Causes. Most common between the ages of one and five, although it may occur at any age. "The predominance of the nervous system in the bodily conformation" is a strong predisposing cause. Among the exciting causes are unfavorable hygienic conditions, dentition, eruptive fevers, blows on the head, mechanical causes preventing the return of the blood from the vena Galeni and the right sinus, compression of the jugular vein, diseases of the right heart, and Bright's disease.

Pathological Anatomy. The effusion may be limited to the ventricles, although there is usually considerable distention of the subarachnoid spaces and œdema of the pia mater and neighboring portions of the brain, whence results more or less softening, especially around the ventricles. The choroid plexus is hyperæmic and may be the seat of minute extravasations.

Symptoms. There are three varieties of acute hydrocephalus with characteristic symptoms, to wit: *comatose*, *convulsive* and the *ordinary*.

Comatose variety, known also as "serous apoplexy," begins abruptly with the phenomena of apoplexy, the result of the sudden effusion. The pressure is usually so great on the medulla oblongata that it ceases to functionate, death resulting in a few hours, rarely lasting several days.

Convulsive variety, the result of Bright's disease or a general dropsy, is ushered in with headache, nausea and vomiting, followed in a day or two with *convulsions*, passing into coma, which usually terminates fatally, although rarely a remission may precede death for a day or two.

Ordinary variety, the most common in children, begins with feverishness, headache, vertigo, photophobia, restlessness, nocturnal delirium, insomnia, twitching and spasmodic contractions of the muscles and great hyperæsthesia of the skin. Such symptoms continue for several days, when convulsions occur, followed by death, or a continuance of the symptoms, followed by rigidity, stupor and death.

Prognosis. Unfavorable.

Treatment. An attempt may be made to remove the fluid by *diuretics* and full doses of *potassii iodidum*.

CONGENITAL HYDROCEPHALUS.

Synonym. Chronic hydrocephalus (?).

Definition. An excessive accumulation of the cerebro-spinal fluid—a cerebral dropsy—in the ventricles—*internal hydrocephalus*, or in the meshes of the pia mater—*external hydrocephalus*, or in both—*mixed hydrocephalus*; characterized by enlargement of the head and more or less pronounced nervous phenomena.

Causes. Imperfect development of the brain or its membranes. Occurs in the offspring of tubercular, scrofulous or syphilitic parents. Inflammatory changes in the ventricles and endyma.

Pathological Anatomy. Enlargement of the head is the chief external pathological condition, although there is no constant ratio between the size of the head and the amount of fluid, the quantity varying from an ounce to a pint or more. The liquid is transparent, of a straw color, containing a small amount of albumen and chloride of sodium.

If the quantity of fluid be small the ventricles are simply distended, if the amount be large the optic thalami and corpus striatum are depressed and flattened, the roof of the ventricles thinned and the foramen of Monro is greatly enlarged. The enlargement of the head may occur before birth and impede or prevent natural delivery, or the head may be normal at birth and increase after. As enlargement progresses the bones are so thinned as to be translucent, the fontanelles and sutures are widened, the lateral portions of the cranium project, the forehead bulges out over the eyes, and the orbital plates are depressed, forcing the eyes outward and downward, producing a variety of exophthalmus; the head has an irregular, triangular shape, the base of the triangle being the top of the head. The scalp being stretched by the pressure within, becomes tense and thin and but scantily covered with hair, the veins which ramify in it are unusually prominent and large, and the entire head is elastic on pressure, from the amount of liquid beneath.

Symptoms. The increased size of the head, with the emaciated condition of the child, who seemingly eats well, is what first attracts the attention. The head appears too heavy, the eyes have a prominent but downward direction, the face is devoid of expression, old and wrinkled, the voice feeble; the mental development is not in comparison with the age. When the period for standing or walking arrives the power is found wanting. The further history is but a con-

tinuation and exaggeration of this, until *convulsions* occur, which sooner or later terminate fatally.

The *duration* of congenital hydrocephalus is usually slow but progressively worse. The majority terminate within the first year; cases are recorded of ten and fifteen years' duration.

Diagnosis. In rachitis the volume of the head is increased, due, in part, at least, to a deposit of calcareous matter on the exterior of the cranial bones. Rachitis may be mistaken for hydrocephalus in cases in which the amount of liquid is small. The differential diagnosis is based on the shape of the head, round in rachitis, square or triangular or with prominences in hydrocephalus; with the persistent downward direction of the eyes and the elasticity of the head on pressure.

Prognosis. Unfavorable. Arrest of progress and even cures are reported. Spontaneous cures are reported following the accidental discharge of the fluid. But such reports are exceptional.

Treatment. The use of the finest aspirator needle to evacuate the fluid is fully justifiable, combined with the internal use of *potassii iodidum*, and gentle but firm compression of the cranium with adhesive strips.

CEREBRAL ABSCESS.

Synonym. Acute encephalitis.

Definition. An acute suppurative inflammation of the brain structure, either localized or diffused, primary or secondary; characterized by impairment of intellect, sensibility and motion.

Causes. *Primary cerebral* abscess is exceedingly rare.

Secondary cerebral abscesses result from injuries to the cerebral tissues, to wit: apoplexy, embolism, thrombosis, and injuries to the cranial bones.

Pathological Anatomy. Abscess of the brain affects the left side more frequently than the right. They are usually encysted or inclosed in a limiting membrane. Abscess of the brain may be single or multiple, varying in size from an almond to an egg.

It occupies a limited and well-defined region of the cerebral tissue, to wit: either corpora striata, optic thalami, gray matter of the cortex, the cerebellum, or the white matter of the hemispheres.

"The initial stage at the site of the abscess is hyperæmia. Minute extravasations take place (capillary hemorrhages), giving to the in-

flamed area a dark, reddish color, whence the term red softening. Migration of white corpuscles, diapedesis of some red corpuscles and exudation of serum holding albumen and fibre in solution, occur simultaneously. The brain tissue, being soft and easily broken up, is rapidly disassociated and its elements disintegrated, and in a short time a soft, pultaceous, red mass results, which more and more assumes a purulent character, becoming first reddish-yellow, then yellow or greenish-yellow, ultimately almost white. The injury caused by an abscess is not limited to the portion of the brain inflamed, but the neighboring territory is in the condition of collateral hyperæmia and œdema" (Bartholow).

Symptoms. A concise description of the symptoms of abscess of the brain is very difficult, on account of the wide variations dependent on its location, and also the difficulty of isolating it from the affections to which it is secondary.

The onset varies according to the cause, although all cases are associated with headache, irritative fever, persistent and spreading paralysis, and convulsions.

If following apoplexy, thrombosis, or emboli there occurs fever and delirium, the paralysis remaining and spreading with spasmodic contractions of the affected muscles.

Occasionally cases run a chronic course, the onset rather insidious; dull, persistent headache, changed disposition, peevish, irritable, unreliable, with decline of moral sensibility; easily fatigued by mental work; inability to stand exertion; memory impaired; vertigo; dyspepsia, soon followed by slight palsies, which progressively increase, becoming general, with involuntary discharges, death following from exhaustion.

Diagnosis. A positive diagnosis is only possible by a close study of the clinical history, as the symptoms at times indicate meningitis, cerebral congestion, epilepsy or cerebral tumor.

Prognosis. The usual termination is in death. The course depends upon the character and extent of the injury, varying from a few days to several months.

Treatment. Palliative, unless the future shall justify the operation of trephining, or of puncturing the brain, thus to favor the exit of pus.

INTRA-CRANIAL TUMORS.

Synonym. Cerebral tumors.

Definition. Tumor of the brain is either a growth in the cerebral tissue, on the meninges, or in the vessels; characterized by symptoms of pressure upon the brain structure.

Causes. Injuries to the head; syphilis; changes in the vessels; tubercle and cancer; hereditary.

Pathological Anatomy. The size of tumors vary, and may become as large as an orange before they will give rise to symptoms.

Tumors of the brain are of various kinds, to wit: *vascular tumors*—aneurisms; *parasitic tumors*—cysticercus; *diathetic tumors*—tubercle or syphilis; *accidental tumors*—fibroplastic.

Whatever the character of growth, it produces irritation of the surrounding parts, and by pressure, destruction of the tissues, or it interferes with the arterial or venous flow.

Symptoms. Those common to tumors in general are, *headache*, persistent and increasing in intensity, *defects of vision*, even blindness, *defects of hearing, taste* and of *speech*, the result of paresis of the vocal cords, *vertigo*, associated with nausea and *vomiting*; *convulsions*, epileptiform in character, usually limited to one side of the body, occurring at regular intervals, or confined to the eyeballs or one limb, with *no loss of consciousness*: *palsies*, beginning first as strabismus, ptosis and dilatation of the pupil, of the facial muscles, paraplegia and general hemiplegia; defects of sensibility, to wit; sensations of numbness, and coldness in the limbs and body. Occasionally disturbances of equilibrium manifested by a tendency to go backward or turn to the right or left; intellectual faculties well preserved until late in the affection, when the memory becomes impaired or lost for certain articles, and finally a gradually advancing imbecility.

Diagnosis. Rarely can a positive diagnosis be made. The following points will aid: long-continued, persistent headache, without appreciable cause, epileptiform convulsions, unilateral, without loss of consciousness, difficulty of vision, hearing and speech, associated with nausea and vomiting, and local and general palsies.

The location of the tumor may be determined by the more or less pronounced character of certain symptoms.

The diagnosis of the character of the growth can only be determined by a close study of the history.

Prognosis. Unless of syphilitic origin, unfavorable.

Treatment. Unsatisfactory. Mostly symptomatic. As benefit occasionally follows the use of *potassii iodidum*, gr. xx, three times a day, or *ext. ergotæ fld.*, ʒ ss-j three times a day, continued until their physiological effects are produced, these remedies should be used in all cases, discontinuing them if no benefit follow.

APHASIA.

Definition. The inability to use spoken language or give vocal utterance to ideas.

Annesic aphasia, or loss of the memory of words by which ideas are expressed.

Ataxic aphasia, the inability to combine the different parts of the vocal apparatus for vocal expression, although the memory of words still remains, so that the afflicted person can write his ideas intelligently.

Agraphia, the inability to recognize and make the signs by which ideas are communicated in written language.

Annesic agraphia, the inability to combine the muscular apparatus—"writers' cramp."

Paraphasia, the mental state in which the wrong words are used to express the idea.

Paragraphia, the state in which wrong or meaningless written signs are used to express the idea.

Pathological Anatomy. The distinction between aphasia and aphonia must be clearly determined.

Aphasia is not the result of any one specific lesion, but occurs during the course of several, to wit: occlusion of certain cerebral vessels; cerebral hemorrhage; cerebral abscess or softening; meningitis; tumors; mental or moral causes; hysteria.

It is now almost definitely determined that lesions of the left middle cerebral artery, island of Reil, third frontal convolution, and parts of the corpus striatum, are associated in the production of aphasia. The lesions are usually upon the left side of the brain, the aphasia being associated with right hemiplegia.

Symptoms. The degree to which articulate language is impaired varies, from the loss of a few words to complete inability to communicate ideas. The intellect does not suffer in proportion to the loss of words; for, showing the individual an article, while he may

miscall it, if you call it by name he will recognize it. This inability to convey thoughts is a source of great mental suffering, in some leading to a suicidal tendency.

A strange clinical fact is the strong tendency to profanity shown by aphasic patients.

Diagnosis. *Aphonia*, or loss of voice, should not be confounded with aphasia, or the inability to remember words.

Paralysis of the tongue, or inability to move this organ, thereby interfering with articulate language, should not be confounded with aphasia, which, as a rule, is not associated with paralysis of the tongue..

Prognosis. Controlled entirely by the cause. If the result of congestion of the brain or a syphilitic tumor, the prognosis is favorable. If associated with hemiplegia the clot may undergo absorption, and recovery follow. If associated with softening of the brain, however, the disease grows progressively worse.

Treatment. Depends upon the cause, which must be energetically treated, as the aphasia pursues a course parallel to the associated malady. Cases not associated with cerebral softening have regained the memory of words by a course of carefully conducted speech lessons.

Cases of aphasia of sudden occurrence are strongly diagnostic of injury due to a spicula of bone if a history of a head wound, or from the pressure of a clot, and the operation of trephining will be of benefit.

DISEASES OF THE SPINAL CORD.

SPINAL HYPERÆMIA.

Definition. An abnormal fullness of the spinal vessels; *active* when arterial hyperæmia; *passive* when venous hyperæmia; characterized by pain in the back, with more or less pronounced, but temporary, disorders of locomotion.

Causes. Cold and exposure; arrested menses; arrest of habitual hemorrhoidal discharge; malaria; protracted erect posture; injuries to the back; certain spinal poisons, as strychnina, picrotoxinum, and alcoholic excesses.

Pathological Anatomy. *Active.* The post-mortem appearances are congestion of the meninges and cord, the same vessels supplying both, with numerous points of extravasation, due to the rupture of capillary vessels. The spinal fluid is increased in amount.

Passive. A general bluish discoloration, owing to the abnormal fullness of the large anastomosing vessels; the spinal fluid somewhat increased.

Symptoms. *Active.* Dull *pain* in the back; persistent and increased by pressure, tenderness on motion; *tingling sensations* in the limbs and feet, and sometimes in the hands and arms. *Increased reflexes*, with *disorders of motility*, and when the patient is in the recumbent position, *jerking of the limbs*. On attempting to walk it is accomplished with difficulty, from an *incomplete loss of power*.

If the upper part of the cord be affected, *dyspnœa* and *palpitation* occur.

There often occur painful priapism and frequent nocturnal emissions.

The above symptoms may be followed by a more or less pronounced temporary depression, the sensation diminished and the lower limbs feel benumbed and heavy, the movements weak.

The electro-contractility is preserved, and in many cases even increased or exalted.

Duration. From a few hours to several days; if longer, myelitis may result.

Diagnosis. *Anæmia* causes more or less spinal irritability and tenderness; but the history, pallor and general weakness, unassociated with defects of motility or sensibility, will prevent error.

Spinal meningeal hemorrhage is more sudden in its onset, its violence and its range of symptoms.

Myelitis and spinal meningitis have symptoms in common with spinal congestion, which will be pointed out when discussing those affections.

Prognosis. Favorable, recovery occurring in three or four days. If the symptoms show a tendency to linger, myelitis more or less pronounced will ensue.

Treatment. Rest, but avoid lying on the back, cups or leeches along the spine, followed either by the iced or the hot douche, or hot sponges, with active purgation, to diminish the blood pressure.

If the result of suddenly arrested perspiration, *pilocarpus*. If following suddenly arrested menses, *aconitum*. If associated with an active circulation, *potassii bromidum* or *fluidum gelsemii extractum*, ℥ v, every four hours; in all cases active purgation.

For the passive form, treating the cause, *ergota*, *digitalis*, tonics and purgatives.

SPINAL MENINGITIS.

Synonym. Leptomeningitis spinalis.

Definition. Inflammation of the arachnoid and pia mater membranes of the spinal cord, either acute, subacute or chronic; characterized by pain in the back, rigidity of the muscles, disorders of motility and sensibility.

Causes. Exposure to cold and dampness; injuries to the vertebræ or membranes; rheumatism; puerperal fever; syphilis.

Pathological Anatomy. *Acute.* Hyperæmia of the membranes, with swelling of the tissues, the result of serous infiltration followed by purulent and fibrinous exudations. The roots of the spinal nerves are covered with exudation, and are swollen and soft. The cord proper is more or less congested and œdematous.

Chronic. Adhesions of the membranes, with more or less accumulation of fluid, resulting in atrophic degeneration of the cord from pressure.

Symptoms. Although an inflammatory affection, yet its onset is usually subacute, the febrile reaction being moderate, with intense boring *pain* in the back, aggravated by motion, *rigidity of the spine* and a sense of *constriction around the body*, "the girdle." *Spasmodic contractions* of the muscle enervated by the nerves originating at the seat of the lesion, with inability to straighten the limbs. If the lower part of the spinal membranes are the seat there occur *retention of urine* and *constipation*; if upper part, *dysphagia*, *dyspnœa* and *feeble heart*. The muscular contractions are excited or increased by motion, but uninfluenced by pressure. *Reflex movements* are not abolished. The rigidity and spasmodic contraction of the muscles are followed by *paralysis* more or less complete, death following from paralysis of the muscles of respiration.

If the inflammation extend to the medulla, the above symptoms are associated with *disorders of speech*, *vomiting* and *delirium*.

Electro-contractility lessened or absent, both as to motility and sensibility, in the affected parts.

Chronic form succeeds to the acute or originates spontaneously, and presents the same form and order of symptoms—excitation and depression.

Diagnosis. The points of importance are, deep, boring pain in the back, aggravated by motion but not by pressure, with spasmodic contraction of the muscles, followed by paralysis.

Myelitis will be differentiated from spinal meningitis when discussing that affection.

Tetanus may be confounded with spinal meningitis. The points of distinction are: in the former occur early trismus with rhythmical spasms excited by irritation of the skin, such irritation not producing contractions in meningitis, while movement of the limb does; progressively increasing and not associated with fever.

Prognosis. Grave. Death is either sudden, from paralysis of the respiration or of the heart, or gradual, the result of exhaustion.

Critical discharges, such as profuse perspiration, urinary flow or epistaxis occur and are followed by rapid recovery. Cases recovering may have more or less pronounced partial or complete paralysis.

Treatment. Rest in bed, upon the side or face. *Cups* or *leeches* along the spine, followed by *ice*, the *hot douche*, *hot sponges*, or mustard. Active purgation.

To reduce the amount of blood in the vessels of the cord, *aconitum* and *ergota* combined with an *opium* impression. When paralysis (depression) occurs, *quininæ sulphas*, gr. iij, combined with *ext. belladonnæ alcohol*, gr. $\frac{1}{4}$, three times a day, or *potassii iodidum*, gr. xx-xxx, three times a day, with flying *blisters* along the spine. If the paralysis still persist, a *hydrargyrum* impression often benefits.

For paralysis, the *galvanic current* to the spine and nerve trunks, and the *faradic current* to the affected muscles, with the deep injection of *strychnina* and the use of *massage*.

PACHYMENINGITIS SPINALIS.

Synonyms. Pachymeningitis spinalis interna; hypertrophic pachymeningitis; pseudo-membranous pachymeningitis.

Definition. An inflammation of the spinal dura mater; characterized by violent pains in the head, neck, shoulders and arms, followed by paralysis of the upper extremities.

Causes. Exposure to cold and damp ; alcoholism ; syphilis ; gout ; injuries.

Pathological Anatomy. *Hypertrophic pachymeningitis* is characterized by an exudation upon the inner surface of the dura mater, which gradually solidifies into a layer of compact connective tissue, which presses upon the spinal cord and nerves, producing a myelitis and an atrophic neuritis, resulting in muscular atrophy.

The most frequent seat of this form of the affection is the cervical region, as first demonstrated by Charcot, whence the term *cervical hypertrophic pachymeningitis*.

In the *pseudo-membranous* form a membranous exudation also occurs, in which large numbers of blood vessels develop and rupture, the hemorrhagic extravasation forming a cyst—hæmatoma—which causes pressure on the cord and nerves.

Symptoms. The onset is slow and gradual, with irregular *chills* and *feverishness*, *violent pains* in the head, neck, shoulders and arms, continuous but subject to exacerbations, and associated with a *painful constriction* of the upper thorax. These symptoms may continue off and on for several months, when the *muscles* of the painful parts begin to *atrophy*, followed by spasmodic contractions and paralysis.

The general health deteriorates with the progress of the muscular symptoms.

The electro-contractility is lost.

Prognosis. If early recognized and promptly treated, the hypertrophic form may be cured.

Treatment. Rest ; nutritious diet ; *oleum morrhue* and the *hypophosphites* ; large doses of *potassii iodidum*, and repeated but systematic counter-irritation.

ACUTE MYELITIS.

Definition. An inflammation affecting the substance of the spinal cord, which may be limited to the gray or white matter, and involve the whole or isolated portions of the cord. When the *gray* matter alone is inflamed, it is termed *central myelitis* ; when the *white* matter and the *meninges*, it is termed *cortical myelitis* ; it may be ascending, descending or transverse in its extension. The disease is characterized by more or less sudden and complete loss of motion and sensation.

Causes. Following spinal meningitis ; exposure to cold and damp ; injuries to the vertebræ ; prolonged functional activity of the cord ; typhus fever ; rheumatism ; syphilis ; puerperal fever, or during the course of exanthemata ; arsenical or mercurial poisoning.

Pathological Anatomy. Intense hyperæmia of the substance of the cord, with extravasations, giving the tissues a reddish-brown or chocolate tint, and also serous transudations, resulting in softening of the structure of the cord, the color changing to yellow and white, the nerve elements undergoing fatty degeneration, presenting the appearance and consistency of cream. The membranes also undergo more or less change.

Symptoms. The severity of the symptoms depends upon the extent and location of the inflammation.

The onset is usually sudden, with a *chill, fever, 103°, frequent pulse,* with *alterations in sensibility and motility*, to wit: *pain* in the back, aggravated by touch and by heat and cold, with sensations of formication ("pins and needles"), the limb feeling as if asleep, or else complete *anæsthesia*, associated with severe *neuralgic pains*.

The distinction between *anæsthesia*, insensibility to touch, and *analgesia*, insensibility to pain, must be clearly determined.

A sensation of *constriction* around the body and limbs, as if encircled by a tight cord, "the girdle pains;" rapidly developing *paraplegia* complete in a few hours, with involuntary discharges. The *reflex functions* are usually abolished, as seen by attempting to cause movement of the limbs by tickling the feet or by striking the patella tendon ; rarely are they diminished, very rarely exaggerated. The temperature of the affected limbs is lowered three or four degrees.

Sloughs and bedsores and muscular atrophy result if the anterior cornuæ—the trophic centres—are affected.

The above symptoms of *loss of motion and sensibility* are associated with more or less pronounced vomiting, hepatic disorders, irregularity of the heart, dyspnœa, dysphagia, apnœa and painful priapisms. The urine is markedly alkaline in reaction.

Among the late manifestations are *shooting pains* and *spasmodic twitchings* or *contractions* of one or all of the muscles of the paralyzed parts.

The *electro-contractility* is abolished in the paralyzed parts.

Diagnosis. Acute spinal meningitis is distinguished from acute myelitis by severe pains, increased by pressure, with muscular con-

tractions increased by motion, followed by paralysis much less profound than the paraplegia of myelitis; in spinal meningitis there exists cutaneous and muscular hyperæsthesia, which is absent in myelitis.

Congestion of the spinal cord is characterized by the mild character and short duration of all the symptoms.

Hemorrhage in the spinal canal is abrupt, with irritative symptoms, slight paralysis, preserved reflexes and electro-contractility.

The principal diagnostic points of acute myelitis are the "girdle" around the limbs or body, rapid and complete paraplegia, lowered temperature in the affected parts, early and persistent sloughing (bed-sores) and alkaline urine.

Prognosis. Varies according to the location of the lesion.

If the paralysis is of the *ascending variety*, death occurs within a few days, from paralysis of the muscles of respiration.

If the *trophic centre* is affected, there occur bedsores, intense pyelonephritis and cystitis and changes in the joints; death from exhaustion in several weeks.

Central myelitis, or inflammation of the *gray matter*, is rapid in its progress, death occurring within a week or two.

The morbid process may be arrested and the general health restored, but some spinal symptoms will persist.

Treatment. Absolute rest is essential to even secure a palliation of the symptoms.

Locally, considerable relief follows the use of hot-water bags or sponges dipped in *hot* water and applied along the spine every few hours.

The remedies most strongly recommended are: *digitalis*, *ergota*, *belladonna*, *bromides*, *cimicifuga* and *quinina*, although I have never observed a cure with any plan of medication, after it was fairly established, save those due to syphilis, by large doses of *potassii iodidum*.

INFANTILE SPINAL PARALYSIS.

Synonyms. Poliomyelitis anterior acuta; essential paralysis of children.

Definition. A rapidly developed inflammation of the anterior horns of the gray matter of the cord, occurring suddenly in children, at times in adults—*acute spinal paralysis of adults*;—characterized by

mild fever, muscular tremors and twitchings, and paralysis of groups of muscles.

Causes. Essentially a disease of early life—the second month to the third or fourth year. The fact of its having occurred in adults must be borne in mind. Cold and damp; dentition (?); injuries to the spine; developed during convalescence from the acute exanthemata.

Pathological Anatomy. The early changes are: medullary hyperæmia, vascular exudation and inflammatory softening, although the naked eye may not recognize any changes. Microscopical examination reveals inflammatory softening of the anterior horns of the gray matter. Among other constant lesions are atrophic degeneration of the multipolar ganglion cells and the anterior nerve roots.

The changes noted as occurring in the cord are usually limited to the dorso-lumbar and cervical enlargements.

As a direct result of the changes in the *trophic centre* and the nerve degeneration of the muscular fibres supplied, there ensue changes in the bones and joints, leading to great deformities.

Symptoms. The onset of the affection varies; it is usually sudden, with an attack of mild *fever* of a remittent type, of a few days' duration, on recovery from which it is noticed that the child is *paralyzed*. Rarely the paralysis may be preceded by *convulsions*.

The *paralysis* may affect both arms and both legs, the legs alone, or only one of the four extremities; it may, but very rarely, be a hemiplegia. The bladder and rectum are not affected, nor can anæsthesia or numbness be detected. The temperature of the paralyzed limb is low and the appearance cyanosed. After a few days there is a slight improvement in the paralyzed parts, although the muscles show a rapid wasting, which is progressive until all muscular tissue is gone.

The *reflex movements* are *impaired* or *abolished*.

The *electro-contractility* by the faradic current is *abolished* in the paralyzed parts.

With the *galvanic* or constant current the "reactions of degeneration" are developed. To fully understand the meaning of this term a knowledge of the normal electrical reactions is necessary.

The normal formulæ for the production of muscular contraction in the physiological state are as follows, the strength of the current being barely capable of causing fair contractions:—

First. The most effective contractions are produced by the *cathode* (*negative*) *pole* on closing the circuit.

Second. The second most effective are produced by the *anode* (*positive*) *pole* on closing the circuit.

Third. The next most effective is by the *anode pole* on opening the circuit.

Fourth. *Cathode pole* contractions on opening circuit are rarely seen in the physiological state.

The "reactions of degeneration" are shown by any reversal of the regular formulæ, to wit: if the *anodal* closure shows stronger contractions than *cathodal* closure; still greater degeneration is shown if *anodal opening* contractions are stronger than either of the above; and almost complete degeneration is shown by the complete reversal of the normal formulæ as shown by distinct *cathodal* opening contractions.

Diagnosis. Hemiplegia from acute cerebral affections in children can be distinguished from infantile paralysis by the disorders of intelligence and the special senses, and the perseverance of the normal electro-contractility.

Paralysis of myelitis occurs in older persons, and is associated with disturbances of the genito-urinary organs and bedsores.

Pseudo-muscular hypertrophy, with paralysis, begins gradually, becoming progressively worse with increase in the size of the limbs.

Prognosis. Depends upon the treatment. If prompt and proper, recovery may be said to be the rule. Mild cases recover within a few days, others as many weeks, more severe cases a month or two. There is no danger to life.

Treatment. The diagnosis during the initial fever is impossible, so that its treatment is symptomatic. On the appearance of the *paralysis* complete *rest*; hot *spinal douche*, mild *galvanism*, and internally, *quinina*, *belladonna* or *ergota*.

With the improvement that follows the above measures, internally, *tinctura nucis vomicæ*, ℥j-iiij t. d., or hypodermatic injections of *strychninæ sulphas*, gr. $\frac{1}{20}$ to $\frac{1}{100}$ twice a week, and *faradism* to the paralyzed muscles.

CHRONIC PROGRESSIVE BULBAR PARALYSIS.

Synonyms. Glosso-labio-laryngeal paralysis; bulbar paralysis.

Definition. A progressive muscular paralysis of the laryngeal muscles, tongue, soft palate and lips.

Causes. Obscure. Rare before the fortieth year. Among many others are named cold, rheumatism, gout, syphilis and injuries about the neck.

Pathological Anatomy. "Degenerative atrophy of the gray nuclei in the floor of the fourth ventricle; with atrophy and gray discoloration of the nerve roots from the medulla, especially of the facial and hypoglossal nerves." "Atrophy and disappearance of the motor ganglion cells is always to be noted. It may be the sole lesion."

"The nerves going to the muscles exhibit sclerosis of the neurilemma, and the degenerative atrophy is found in the nerve roots coming from the bulb."

Symptoms. The disease begins insidiously. There is first noticed some *difficulty in articulation*, from want of precision in movements of the tongue, which increases until that organ is completely paralyzed. The *paralysis* gradually invades the *soft palate*, *pharyngeal* muscles, causing difficulty in deglutition, the *orbicularis oris*, preventing closure of the lips, the *laryngeal* muscles interfering with *articulation*. When the disease is fully developed the condition of the patient is most pitiable, indeed; articulation is impaired or impossible, deglutition interfered with, the lips remaining apart, allowing the saliva to dribble from the mouth, and liquids to return through the nose if attempts are made to swallow them. The general health gradually suffers from insufficient nutrition and imperfect respiration. The "reactions of degeneration" are present.

Diagnosis. It can hardly be confounded with any other malady

Prognosis. Unfavorable. The duration is from one to five years.

Treatment. Entirely symptomatic.

SPINAL SCLEROSIS.

Synonym. Duchenne's disease.

Definition. A myelitis; an increase in the connective tissue of the spinal cord, with atrophy of the nerve structure proper.

Varieties. I. *Antero-lateral sclerosis*; II. *Cerebro-spinal sclerosis*; III. *Posterior sclerosis* or *locomotor ataxia*.

Causes. Generally a hereditary neuropathic diathesis; syphilis; mineral poisons; shocks or injuries to the cord; exposure to cold and wet; mostly occurring between the ages of thirty-five and fifty-five; males more liable than females.

Pathological Anatomy. The changes in the cord are gradual in their development and follow a longitudinal instead of a transverse direction.

The form, consistence and color of the cord are altered, it being atrophied, indurated and of a grayish color.

The changes are hyperplasia of the connective tissue, with granular degeneration, atrophy and disappearance of the proper nerve elements. The nerve roots undergo the same fibroid change. The joints undergo remarkable atrophic degeneration.

ANTERO-LATERAL SCLEROSIS.

Symptoms. The chief symptom is *paraplegia*, or entire loss of motion in the lower extremities. Preceding the paralysis there occur *jerking and twitching*, with *cramps and stiffness* of the muscles of the affected parts. As the disease is progressing the gait is of a peculiar character, termed by Hammond "the waddle;" the patient stepping on the toes and showing a tendency to fall forward. There is a gradual and increasing feeling of heaviness and weakness in the affected limbs. Sensation is unaffected. Reflex phenomena are preserved, at times even exalted. As the morbid process extends upward, the superior extremities suffer in the same manner as those of the lower.

Electro-contractility early impaired, and gradually declining until abolished.

POSTERIOR SCLEROSIS, OR LOCOMOTOR ATAXIA.

Symptoms. Gradual onset by *sharp, darting, electric-like pains* in the limbs, with *loss of sensation* in the feet, the patient being unable to distinguish between hard and soft substances in walking, and, if the upper portion of the spinal cord be affected is unable to coördinate the muscles of the fingers sufficiently to button his clothing.

Loss of coördination, the subject being unable to walk upon a straight line with his eyes closed, and with difficulty if his eyes are opened. Inability to preserve the erect position with the feet close

together. The *sight* impaired; either double vision or inability to distinguish between different colors. *Reflexes abolished*, and "girdle" pains about the body and limbs. Inordinate stimulation of the genital functions and frequent nocturnal emissions. Although the patient is unable to coördinate the muscles, their power is not lost, for, on being supported, he can kick or strike with his usual force.

There is generally entire absence of cerebral phenomena.

Diagnosis. The symptoms are so characteristic that with care an error in the diagnosis seems impossible.

Chronic myelitis is characterized by paralysis, and the course of the two affections is otherwise so different that error should not occur.

Disease of the cerebellum presents symptoms of disordered co-ordination, but they are the result of vertigo, and associated with headache, nausea and vomiting.

Prognosis. Sclerosis sooner or later terminates unfavorably. It may be retarded for years, but the patient is never able to walk without great difficulty.

Treatment. Insist upon as complete rest as possible. Good nutritious diet, milk being the most desirable.

Potassii iodidum, or *hydrargyri chloridum corrosivum*, in full doses, or *aurii et sodii chloridum*, gr. $\frac{1}{20}$, three times a day, often remarkably retard the progress of the affection. The best results are obtained, however, from *argenti nitras*, gr. $\frac{1}{4}$ – $\frac{1}{2}$, or *oxidum*, gr. $\frac{1}{2}$, three times a day, withholding it at intervals of a few weeks, to prevent discoloration of the skin (argyria).

The severe and sharp pains require treatment, at first giving preference to any of the substitutes of opium, but finally *opium* itself will have to be resorted to.

Galvanism to the spine and *faradism* to the affected limbs are beneficial.

DISEASES OF THE NERVES.

NEURITIS.

Definition. An inflammation of the nerve trunks; characterized by pain and paresis of the parts supplied by the affected nerve trunk.

Causes. Wounds and injuries; cold and damp.

Pathological Anatomy. Hyperæmia, followed by exudation into the nerve, "which becomes softened and ultimately breaks down into a diffuent mass. Migration of white corpuscles takes place into the neurilemma. Recovery may occur before destruction of the nerve elements is produced, absorption of the exudation occurring. "It is important to note that when inflammation occurs in a nerve it may extend from the point first diseased upward (*neuritis ascendens*), or downward (*neuritis descendens*)."

Symptoms. The onset may be accompanied with *febrile reaction*. The most decided symptom is *pain* along the course of the nerve trunk and its peripheral distribution, of a *burning, tingling, tearing, intense* character, increased by pressure or motion. If the affected nerve be a mixed one—sensory and motor—*spasmodic contractions* and *muscular cramps* occur, followed by impaired motion, terminating in *paresis* of the muscles innervated by the affected trunk.

If the inflammation proceeds to destruction of the nerve trunk, wasting and degeneration of the muscular tissue ensues. Various trophic changes also occur, such as cutaneous eruptions, and clubbing of the nails. The *electro-tractility* is impaired or lost.

Diagnosis. Myalgia or muscular pain is not associated with paralysis, nor does the pain follow the course of a nerve trunk.

Prognosis. Generally favorable, with proper treatment.

Treatment. Repeated *blistering* along the course of the nerve, with full doses of *potassii iodidum* are usually successful. As the more acute symptoms subside the use of *galvanism* or a feeble, slowly interrupted *faradic* current restores the interrupted function.

For the pain and muscular contractions, hypodermatic injections of *morphina*.

NEURALGIA.

Definition. A disease of the nervous system, manifesting itself by sudden pain of a sharp and darting character, mostly unilateral, following the course of the sensory nerves.

Varieties. I. *Neuralgia of the fifth nerve*; II. *Cervico-occipital neuralgia*; III. *Cervico-brachial neuralgia*; IV. *Dorso-intercostal neuralgia*; V. *Lumbo-abdominal neuralgia*; VI. *Sciatica*.

Causes. Heredity; anæmia; malaria; syphilis; metallic poisons; anxiety; mental exertion; exposure to cold and damp; injuries to a nerve trunk.

Pathological Anatomy. The old axiom of neuralgia being "the cry of the nerves for pure blood" is perhaps only part of the truth. The changes in the nerve trunks or centres have not as yet been determined. A fair number of cases present the changes of neuritis.

* NEURALGIA OF THE FIFTH NERVE.

Synonyms. Tic-douloureux; Fothergill's disease.

Symptoms. *Paroxysmal pain*, of a sharp, darting, stabbing character, most common at points along the course of the supra- and infra-orbital branches of the fifth nerve of the left side, attended with *increased lachrymation*. When of any duration nutritive changes are observed in the nervous distribution, to wit: *œdema* along the course of the nerve, *gray eyebrows* and *convulsive twitches* of the muscles, termed "*tic douloureux*," *tenderness* at the infra- and supra-orbital foramina, as well as along the course of the nerve distribution.

CERVICO-OCCIPITAL NEURALGIA.

Symptoms. *Paroxysmal pain*, of a sharp and lancinating, or deep, heavy, tensive character, along the course of the occipital nerve upon one or both sides, extending from the vertex and on the neck as far down as the clavicle, and upward and forward to the cheek. May be associated with *hyperæsthesia* of the skin, and with *cramps* in the cervical muscles, and with attacks of *herpes*.

CERVICO-BRACHIAL NEURALGIA.

Symptoms. *Paroxysmal pains*, of a severe, boring, burning or tensive character, with *sensations of numbness and weakness* of the arm, hand, shoulder, scapula and mamma, with tenderness along the cervical plexus. *Ædema* of the arm and other parts along the distribution of the cervical plexus occur if the neuralgia be of long duration, the result of nutritive changes, the limb at times becoming pale, the skin glossy, dry and harsh.

DORSO-INTERCOSTAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating character, along the fifth and sixth left intercostal spaces, often associated with the development of herpes, the so-called *herpes zoster*, or "shingles."

Tenderness at the points where the nerves emerge from the intervertebral foramina at the sides of the chest and at points in front.

LUMBO-ABDOMINAL NEURALGIA.

Symptoms. *Paroxysmal pain* of a sharp and lancinating, at times heavy and dull character, following the course of the ileo-hypogastric nerve, ileo-inguinal and external spermatic nerve, supplying the integument of the hip, the inner side of thigh, the scrotum and labium.

SCIATICA.

Definition. Pain following the course of the sciatic nerve. The sacral plexus is made up of the fourth and fifth lumbar and the first two pairs of sacral nerves.

Symptoms. Sciatica usually follows an attack of lumbago, the pain becoming fixed in the sciatic nerve; at times it is a true neuritis. *The pain is sharp*, tearing, shooting or lancinating in character, increased upon motion, shooting along the course of the nerve into the hip, inner side of the thigh, half of the leg, ankle and heel, at one or all of these points, in paroxysms lasting from a few hours to twenty-four hours or longer. The tactile sensation in the foot and motility in the limbs are impaired, and if of long duration, wasting of the limb occurs.

Diagnosis. *Rheumatism*, so-called, is the only condition likely to be confounded with neuralgia.

The history of the attack, the character of the pain, with its localized spot of tenderness, should prevent such an error.

Prognosis. If promptly and properly treated, unless the result of pressure of an exostosis, aneurism or other tumor, favorable.

Treatment of Neuralgia. Rest; easily assimilated but nutritious diet; removal of the cause, if possible. If anæmic, *ferrum* and *arsenicum*. If rheumatic, *alkalies*. If syphilitic or the result of metallic poisons, *potassii iodidum*. If malarial, *quinina*.

For an attack, *morphina* and *atropina*, hypodermatically, afford the most prompt and ready relief.

Success usually follows the use of the well-known "Gross (Prof. S. D.) neuralgic pill :"—

R. Quininæ sulphas.....	gr. ij	
Morphinæ sulphas	gr. $\frac{1}{20}$	
Strychninæ.....	gr. $\frac{1}{30}$	
Acidi arseniosi.....	gr. $\frac{1}{20}$	
Extracti aconiti.....	gr. $\frac{1}{2}$	M.
Ft. pil. No. 1.		

SIG.—One every one, two or three hours.

In sciatica, prompt relief follows the *deep injection of chloroformum*. Locally, blisters along the course of the nerve, or a lotion of *chloral*, *camphora*, *morphina* and *chloroformum* combined, in solution.

Facial neuralgia is often wonderfully benefited by the internal administration of *ext. gelsemii fld.*, gtt. iij-v, every three or four hours, until its physiological effects are produced. All forms of neuralgia are more or less benefited by—

R. Quininæ sulph.....	gr. iij	
Ferri redact	gr. j	
Acid arsenious.....	gr. $\frac{1}{20}$	
Aconitiæ.....	gr. $\frac{1}{120}$	M.

In pill every four or five hours.

FACIAL PARALYSIS.

Synonym. Bell's palsy.

Definition. An acute paralysis of the seventh cranial or facial nerve, the great motor nerve of the muscles of the face—the *nerve of expression*.

Causes. Exposure to a current of cold air against the side of the face—over the *pes anserinus*—is the most frequent cause. Also due to injury or disease of the middle ear. Syphilis.

Symptoms. The facial nerve supplies the muscles of the face, the muscles of the external ear, also the stylo-hyoid, posterior belly of the digastric, the platysma, one muscle of the middle ear, the stapedius and one palate muscle, the levator palati; by means of the chorda tympani branch it controls the secretion of the parotid and submaxillary glands, and, possibly, the sense of taste. It also furnishes motor power to the azygos uvulæ, the tensor tympani and the tensor palati muscles.

The onset is usually sudden, with *tingling of the lips and tongue*, and upon looking in the mirror the patient is surprised by the perfectly blank, motionless side of the face, the corner of the mouth depressed, the eyelids open, the face drawn toward the well side, and with inability to expectorate, whistle or swallow.

Any or all the muscles innervated by the nerve may participate in the paresis.

The *electro-contractility* is feeble or lost. The *reflexes* are abolished.

Diagnosis. Paralysis of the muscles of the face occurs in hemi-

plegia; the points of differentiation are the presence of cerebral symptoms and the normal reflex excitability.

Facial palsy with otorrhœa, imperfect hearing, obliquity of the uvula and loss of taste determine its origin within the aquæductus Fallopii.

It is the result of cold if the taste be normal and the uvula straight.

If other nerves are also involved the origin is central.

Prognosis. Favorable.

Treatment. If the result of cold and damp, diaphoresis with *pilocarpus*, or diuresis with *potassii iodidum*, and *blisters* in front of ear, with *galvanism* of the affected muscles.

CEREBRO-SPINAL NEUROSES.

CHOREA.

Synonyms. St. Vitus's dance; insanity of the muscles.

Definitions. A functional (?) disorder of the nervous system; characterized by irregular spasmodic movements of groups of muscles, with muscular weakness, more or less approaching paralysis of the affected parts.

Causes. Essentially a disease of childhood; hereditary; reflex from dentition, worms, masturbation or fright; probably the result of rheumatism in many cases.

Pathological Anatomy. As yet there has been no constant anatomical lesion discovered, the theory of emboli having, however, many advocates.

Symptoms. The onset is usually gradual, the child seemingly grimacing or jerking the arm or hand, as if in imitation, followed by decided, *irregular jactations* of the muscles of the face (histrionic spasm), of the eyelids (blepharospasm), eyeballs (nystagmus), and the shoulder, arm and hand, finally extending to the lower extremities, interfering with *motility*; in severe cases, inability of self-feeding or holding anything in the hands. The *speech* is often unintelligible, the tongue constantly moving in an irregular manner.

The *heart's* action is tumultuous and irregular, associated with a soft, blowing, systolic murmur, most distinct at the base. The mus-

cles are usually quiet during sleep, although this is not always the case. The mind is somewhat blunted, the temper irritable, the memory impaired. If the irregular muscular movements are confined to one side of the body it is termed *hemi-chorea*.

Diagnosis. Chorea was confounded with epilepsy until the points of distinction were pointed out by Sydenham.

Paralysis agitans has general muscular tremor, beginning in one limb, gradually progressing, uninfluenced by treatment; a disease of the elderly.

Post-hemiplegic chorea is the choreic movement of a paralyzed limb.

Prognosis. The vast majority of cases recover, but relapses are very common.

Treatment. Remove the cause, if possible. Easily assimilated diet. Many cases improve rapidly by confinement to bed in a darkened room. If the muscular movements interfere with sleep, *morphina* or *chloral* are indicated. Regulate the secretions.

Arsenicum is the most reliable remedy yet introduced for the treatment of chorea. It should be pushed to its first physiological effects, then gradually reducing the dose until all symptoms disappear. The form of the remedy best adapted is *liquor potassii arsenitis*, gtt. v, increased to x or even xv, three times a day. *Extractum cimicifugæ fluidum*, ℞xx-℥j, t. d., is serviceable, especially in cases following a rheumatic attack. Cases resisting the arsenicum treatment may succumb to *hyoscyamine*, gr. $\frac{1}{200}$ — $\frac{1}{100}$, three times daily. If anæmia be present, combine or alternate *arsenicum* with *ferrum*.

EPILEPSY.

Definition. A chronic disease, of which the characteristic symptoms are a sudden loss of consciousness, attended with more or less general convulsions.

Causes. Heredity; rarely, worry, anxiety, depression or fright. Pressure from a tumor at the periphery, or thickening of the membranes of the brain, causing pressure; dyspepsia; syphilis; uterine diseases.

Pathological Anatomy. There are no constant anatomical lesions as yet, associated with epilepsy.

Varieties. I. *Epilepsia gravior*, le grand mal; II. *Epilepsia mitior*, le petit mal.

Symptoms. *Le grand mal* is preceded by a more or less pronounced and curious sensation, the so-called *aura epileptica*.

The *attack* proper is *sudden*, the subject *suddenly falling*, with a *peculiar cry*, *loss of consciousness*, *pallor of the face*, the body assuming a position of *tetanic rigidity*, succeeded after a few moments by more or less pronounced *clonic convulsions*, followed by *coma* of several hours' duration. The subject awakens with a confused or sheepish expression, with no knowledge of what has occurred, unless he has injured himself during the attack, either by the fall, or, what is very common, has *bitten his tongue* during the convulsions.

Le petit mal is manifested either by attacks of *vertigo*, the consciousness being preserved, or by a *passing absent-mindedness*, either form being associated with *slight convulsive* phenomena, followed by *coma* of short duration.

The mental functions are not, as a rule, injured by attacks of epilepsy, unless they recur very frequently. Indeed, when at wide intervals the subject seems relieved by them, "the sudden, excessive and rapid discharge of gray matter of some part of the brain on the muscles," the so-called "electrical storm," having cleared the cerebral atmosphere.

Diagnosis. *Uræmic convulsions* closely resemble an epileptic attack; but the dropsy or general œdema and albuminous urine of the former should guard against error.

Feigned epilepsy often misleads the most practical expert.

Prognosis. The vast majority of cases will not recover under treatment, but have the frequency and severity of the attacks greatly ameliorated, but sooner or later returning with their former severity. Cases the result of the various reflex causes usually recover when the cause is removed.

Treatment. To avert an impending attack, inhalations of *amyl nitris*, gtt. iij-v, a few whiffs of *chloroformum*, or the hypodermatic injection of *morphina*.

To prevent the return of attacks, remove the cause, if possible; attention to the secretions, and the internal administration of *potassii bromidum* in doses sufficient to abolish the faucial reflex and produce the symptoms of bromism, has great power in diminishing the severity and frequency of the attacks; better results are sometimes obtained by the combination of the various bromides. Cases in which the bromides are not serviceable are sometimes benefited by

argenti nitras, *belladonna*, or *cannabis indica*. Weak and anæmic subjects usually do better with *strychnina* in full doses than with *potassii bromidum*. If a history of syphilis can be obtained, the combination of *potassii iodidum* and *potassii bromidum* will effect a cure.

Whichever of the above remedies are beneficial in any particular case, the permanency of the relief can only be maintained by the continuation of the drug for at least two years after the last attack.

Gowers highly recommends the following in cases complicated with cardiac dilatation :—

R.	Potassii bromid.....	gr. xx	
	Tinct. digital.....	℥ x.	M.
SIG.	—Three times a day.		

Another good combination is the following :—

R.	Potassii bromid.....	gr. xv	
	Sodii bromid.....	gr. xv	
	Liq. potassii arsenit.....	℥ ij	
	Ext. conii fld.....	℥ ij	
	Aq. cinnamomi.....	ʒ j	
	Inf. gentian comp.....ad.....	ʒ ss.	M.
SIG.	—Two hours after meals.		

Brown-Séquard's mixture for epilepsy is as follows :—

R.	Potassii iodidi.....	8 parts.	
	Potassii bromidi.....	8 “	
	Ammonii bromidi.....	4 “	
	Potassii bicarb.....	5 “	
	Inf. columbo.....	360 “	M.

SIG.—One teaspoonful before meals and three dessertspoonfuls on going to bed.

Prof. Da Costa has used with success a bromide of *nickel* in cases that have withstood the other combinations of the bromides.

DISEASES OF THE BLOOD.

ANÆMIA.

Synonyms. Spanæmia; hydræmia.

Definition. A deficiency of red corpuscles and albuminoid compounds—a poverty of the blood; characterized by pallor and general weakness.

Oligæmia is a lessening in the amount of blood; *Ischæmia* is a localized anæmia.

Causes. Predisposing and exciting.

Predisposing. Sex; the female, pregnancy and menopause; heredity.

Exciting. Deficient food, air or sunshine; excessive work; mental worry; prolonged and frequent nocturnal emissions; excessive nursing; chronic intestinal catarrh; Bright's disease; malaria.

Pathological Anatomy. *Post-mortem*, the tissues are thin, shrunken and bloodless. If the anæmia has been of long duration, patches of fatty change are seen in the various organs. The blood has a brighter color, the result of diminution in the number of red corpuscles and the quantity of the hæmoglobin; it is thinner than normal, and coagulates slowly and imperfectly, from diminution of the fibrino-plastic constituent.

Symptoms. *Pallor*, gums, tongue, ear and conjunctiva pale. *Muscular weakness*, inability for exertion. *Deficient appetite* and *impaired digestion*, attacks of *vomiting* the result of anæmia of the medulla oblongata. *Quickened respiration*, *irritable temper*, *vertigo* in the erect position, attacks of *swooning*, *hysteria*, and rarely *epilepsy*. *Irritable heart*, with soft *systolic basic murmurs* and attacks of hysteria. Nocturnal emissions in male and deficient menses in female. *Marasmus* in children. More or less general *œdema* of the eyelids and ankles. Long continued, symptoms of fatty changes of various organs, or gastric ulcer result.

Diagnosis. The symptoms of anæmia are so characteristic that an error is impossible; the cause of it, however, may be hidden.

Prognosis. Favorable if treated early. If protracted, results in more or less general symptoms of fatty degenerations or ulcer of the stomach.

Treatment. Remove the cause. Easily assimilated, blood-producing diet. Fresh *air*, *sunlight* and *exercise* short of fatigue. Purgatives with stomachic tonics, to promote digestion.

For the anæmia proper, *ferrum* in some form is the most valuable remedy, always remembering that it is not assimilated if the intestines and liver be torpid.

The following alterative tonic, known as Smith's (Dr. A. H.), is frequently of value:—

R. Hydrargyri chloridi corrosivum.....	gr. j-ij	
Liq. arsenici chloridi.....	f ʒ j	
Tinct. ferri chloridi,		
Acidi hydrochlorici dil.....āā.....	f ʒ iv	
Syrupi.....	f ʒ iij	
Aqua..... ad.....	f ʒ vj.	M.

SIG.—One dessertspoonful in a wineglassful of water after each meal.

CHLOROSIS.

Synonym. Green sickness.

Definition. A pronounced anæmia, occurring in girls about the age of puberty.

Causes. Obscure; inherited; menstrual irregularities. Hammond maintains "that it is an affection of the nervous system, the blood changes being secondary."

Pathological Anatomy. The blood is deficient in red corpuscles, the volume of the fluid normal or nearly so. Rarely the mass of blood is increased. The body is well nourished and the subcutaneous fat well distributed. The organs are abnormally pale. The spleen, the lymphatics and the marrow of the bones are not affected in any manner.

Symptoms. The condition is associated with disorders of menstruation. The young girl experiences a *change of disposition*, becoming *morose* and *despondent*, or rarely *hysterical*.

"As respects the actual condition of the sexual organs, there are two forms of derangement which happen in chlorosis; there are the *amenorrhæic* form and the *menorrhagic* form." After an attack of menorrhagia or after the failure of the flow to appear, the changes occur. The complexion changes, *blondes* becoming pallid, waxy and puffy, without œdema; *brunettes* becoming muddy and grayish in color, with bluish-black rings under the eyes. Weariness and fatigue upon the least exertion; the heart irritable, with shortness of breath. The appetite is vitiated, the digestion imperfect; attacks of gastralgia are frequent.

A not infrequent complication is *gastric ulcer*. Phthisis develops in those having the slightest predisposition.

Prognosis. As a rule, unfavorable, on account of the liability to grave complications. Those recovering are always liable to relapses.

Treatment. A generous, nutritious diet; fresh air; moderate exercise; change of scene; cheerful surroundings. *Ferrum* and *arsenicum* are of the greatest utility. A good combination is—

R. Ferri arseniatis	gr. $\frac{1}{2} - \frac{1}{6}$	
Ext. nucis vomicæ	gr. $\frac{1}{6} - \frac{1}{4}$	M.
Ft. pil. No. I.		

SIG.—After meals.

The following is *Blaud's* formula, so highly lauded by Niemeyer :—

R. Pulv. ferri sulph.,		
Potassii carbonat. puræ.....āā.....	℥ ss	
Tragacanthæ	q. s.	M.
Ft. pl. No. xcvj.		

SIG.—One to three or four pills three times daily.

PROGRESSIVE PERNICIOUS ANÆMIA.

Synonyms. Anæmatisis; essential anæmia; anæmia of fatty heart.

Definition. A pernicious, progressive form of anæmia, of unknown cause, resisting all treatment, and toward its termination associated with fever.

Pathological Anatomy. The blood is scanty and pale, with diminished red corpuscles, albuminates and fibrin, showing a very feeble tendency to coagulate. There is no increase in the white corpuscles.

The *marrow* in adult bones becomes foetal, red and adenoid, and contains microcytes; several other changes have occurred secondarily in the marrow.

Secondary to the anæmia, the heart, larger arteries and certain capillary tracts exhibit circumscribed or diffused fatty degeneration.

The liver, spleen, kidneys and stomach are decidedly anæmic, causing fatty changes in those organs. The skin may contain petechiæ of a purplish or brownish tint, and internal hemorrhages are not infrequent; retinal hemorrhage is rarely wanting.

There is not much emaciation, though the pallor is pronounced.

Symptoms. It begins insidiously, with increasing *languor* and *pallor*, the *muscular weakness* compelling the patient to take his bed. *Cardiac palpitation*, *dyspnœa*, attacks of *syncope*, *œdema* and swelling about the ankles, with *petechial* spots scattered irregularly over the surface.

The appetite is wanting, and nausea and vomiting are occurrences, with marked *dyspepsia* and persistent *diarrhœa*. As the disease progresses a remittent form of *fever* develops, the temperature frequently showing 102° – 104° F.

Disorders of vision are the result of the *retinal hemorrhage*. The cardiac sounds are feeble and associated with soft basic or anæmic murmurs.

Diagnosis. Progressive pernicious anæmia is distinguished from simple anæmia and chlorosis by the greater severity of the former. From leucocythemia by the normal-sized spleen and liver, and the absence of increase in the white corpuscles.

Prognosis. Unfavorable.

Treatment. Symptomatic.

LEUCOCYTHEMIA.

Synonyms. Leucæmia ; white cell blood ; white blood ; anæmia splenica.

Definition. A condition in which there is an enormous increase in the number of white blood corpuscles. It may assume either a *splenic*, a *lymphatic*, or a *myelogenic* form, and is characterized by symptoms of pronounced anæmia.

Causes. The real cause and nature of the affection is unknown.

Pathological Anatomy. The *spleen* is increased in size, density and firmness ; the *lymphatic glands* all over the body also enlarge, but are soft to the touch, often fluctuating ; the *marrow of the bones* changes from its normal rose color to that of a greenish-yellow ; the *liver* also enlarges enormously. The *blood* is paler than normal, its specific gravity reduced from 1.055 to 1.040 or lower, and the *white corpuscles* increased in number and in size, the *red corpuscles* being lessened in number and size.

Symptoms. The onset and early progress of the disease is identical with that of simple anæmia, accompanied by *swelling* of the *abdomen* and a feeling of *fullness* and *pain* in the *splenic region*, due to enlargement of that organ.

In the *lymphatic variety*, enlargement of the glands in the groin, neck and axillary region are associated with the *great pallor*.

In the *myelogenic variety*, the bones, more particularly the ribs and

sternum, are tender on pressure, the patient assuming a waxy appearance.

In each variety the appetite is poor, the digestion feeble, the bowels loose, the patient easily fatigued, with cardiac palpitation, and dyspnoea, with œdema of the eyelids and ankles. The urine is scanty and of high specific gravity—1.020–1.030.

Diagnosis. This should cause but little trouble if enlarged spleen, lymphatic glands and tender bones are associated with great pallor, and the characteristic appearance of the blood as demonstrated by a "puncture of the finger of the patient and receiving the blood on a piece of white linen or a lawn handkerchief, and placing by the side of it a similar stain of blood from a healthy subject. The full color of the latter contrasts strikingly with the stain of the former, which is hardly of a blood color, and translucent."

Prognosis. No case of recovery has yet been recorded. The average duration is between two and three years.

Treatment. Symptomatic. A combination of the following remedies with generous diet, fresh air, sunshine, pleasant surroundings, *oleum morrhuae* and the *hypophosphites* have at times seemed of temporary utility, to wit: *quinina*, *arsenicum*, *ferrum* and *ergota*.

ADDISON'S DISEASE.

Synonym. Melasma supra-renalis.

Definition. "The bronzed-skin disease." Thus defined by Averbek: "A well-marked constitutional disease, exhibiting itself locally as a chronic inflammation of the supra-renal capsules, but in its essence consisting in a peculiar anæmic condition, always tending toward death, which is characterized by intense development of pigment in the cells of the rete malpighii and in the epithelium of the mucous membrane of the mouth."

Causes. Uncertain. Tubercle, scrofula and syphilis have each been given as the cause.

Pathological Anatomy. A low form of inflammation, terminating in degeneration of the supra-renal capsule. The blood is deficient in fibrin and red corpuscles, with a slight increase of the white corpuscles. Fatty degeneration of the heart and vessels has been observed in some cases.

"The most striking change during life—the abnormal pigmenta-

tion—is due to the deposition of granular pigment in the cells of the rete malpighii, in the papillary portion of the cutis, and even in the connective tissue corpuscles. No change occurs in the proper structure of the skin. Similar pigment deposits occur in the mucous membrane of the mouth, especially along the edges of the teeth."

"The disease of the supra-renal capsules excites an irritation of the vaso-motor system—the trophic system—which leads to the pigmentation."

Symptoms. The onset of the disease is insidious, with a feeling of extreme *languor*, *muscular fatigue*, *asthenia*, *indigestion*, *anorexia*, *dyspnœa*, *cardiac palpitation*, *vertigo*, *melancholia* and excessive drowsiness.

The surface is first pale, then changes to a hue like that of *melanæmia*, changing to *icteroid*, finally resembling the color of a mulatto, and then to a *lustreless bronze*. These changes also occur on the mucous membrane of the lips, tongue, gums and mouth.

Prognosis. An incurable disease. Duration, a year or two.

Treatment. Symptomatic.

HÆMOPHILIA.

Synonyms. Hemorrhagic diathesis; "bleeder's disease."

Definition. A congenital condition characterized by the habitual occurrence of hemorrhages.

Cause. Hereditary.

Symptoms. The *bleeding* appears about the period of first dentition, and consists of spontaneous *hemorrhages* from the mucous membrane of the nose, mouth, lungs, stomach, intestines, or genito-urinary passages, or in *perfect cases*, hemorrhages occur directly from the fingers, toes, lobes of the ears, back of the hands or arms, without any apparent change in the skin, and continue, in spite of the most powerful means, for days or weeks. *Traumatic hemorrhages* occur if an injury of any kind is sustained about the period of the development of the bleeding.

Epistaxis is the most common form of all those named.

As a result of the great loss of blood, the subject suffers from all the symptoms of profound anæmia.

Diagnosis. It is impossible to confound the "bleeder's disease" with any other affection.

Prognosis. Death is the usual termination within a few weeks from the time of its development, which may not be until adult life.

Treatment. Entirely symptomatic. It is claimed that "*potassii chloras*—an ounce of a saturated solution three times a day—combined with *tinctura ferri chloridi*," will eradicate the constitutional tendency.

SCORBUTUS.

Synonym. Scurvy.

Definition. A peculiar condition of malnutrition or anæmia, gradually developing upon a dietary deficient in fresh vegetable material; characterized by decided anæmia, debility, mental lethargy, petechiæ and a swollen and spongy state of the gums, with a tendency to bleed upon the slightest irritation.

Causes. The disease only occurs when fresh vegetable nutriment or some appropriate substitute has been for a time partially or completely withheld.

Pathological Anatomy. An undetermined derangement in the composition of the blood, with diminished proportion of the potash salts. Spleen enlarged. The tissues are wasted and present extravasations, due to either one of or the combined presence of the following conditions, to wit: liquid condition of the blood, allowing it to escape from the vessels, alterations in the walls of the vessels, or, a vaso-motor paralysis.

Symptoms. General weakness, lassitude, indisposition to either mental or physical exertion. The skin is dry, rough and of a muddy pallor, the face pale and bloated. *Swelling and sponginess* of the gums, with great tendency to bleed and an exceedingly *offensive breath*. *Looseness of the teeth*, hemorrhages from mucous surfaces, and *extravasations of blood* within and beneath the skin. The *lips are pale*, which is in striking contrast to the *redness of the gums*; the eyes are sunken and surrounded by a dark blue circle.

Hemorrhages occur from the nostrils, mouth, bronchial tubes, intestinal canal and vagina. The skin is dry and rough, resembling that of a plucked fowl. Œdema of the face and ankles not infrequent.

Depression of the spirits is characteristic. Palpitation and dyspnœa on exertion. Urine high colored, speedily becoming fetid.

The patient usually longs for *fresh vegetables and fruits*.

Complications. Dysentery. *Scorbutic dysentery* is a frequent complication. It may co-exist with typhoid and typhus fever.

Prognosis. Favorable, if early and properly treated.

Treatment. The chief indication is the assimilation of the alimentary principles needed for the healthy constitution of the blood and the invigoration of the system.

The juice of lemons, oranges and other fruits. Antiscorbutic vegetables, to wit: raw cabbage, cresses and raw potatoes, in conjunction with meats, milk and farinaceous food.

Improve the appetite and digestion by the use of *strychnina*, *quinina*, *mineral acids* and bitter *infusions*. *Potassii chloras*, locally, will relieve the oral symptoms.

PURPURA.

Synonym. Hemorrhœa Petechialis.

Definition. An acute disease, characterized by purplish discolorations of the skin, the result of hemorrhages into the upper layers of the cutis and beneath the epidermis.

Varieties. *Purpura simplex*; *purpura hemorrhagica*; *purpura urticans*.

Causes. Not properly understood. It may occur at any age, but is especially frequent in children and elderly people.

Symptoms. *Purpura simplex* is the mildest form of the affection, and is characterized by the *sudden* appearance of *small, bright red* spots—a cutaneous hemorrhage—most commonly on the legs, associated with slight lassitude, mild febrile reaction, and *aching pains* in the limbs. The hue of the spots rapidly fades to a purplish color and slowly disappears. Relapses are common.

Purpura hemorrhagica has in addition to the *eruption* of purpura simplex—the cutaneous hemorrhage—a flow of blood from the free surface of mucous membranes. The most common hemorrhage is *epistaxis*, slight or profuse. Other hemorrhages are *hæmatemesis*, *melæna*, *hæmaturia*, *hæmoptysis*, *menorrhagia*, and also into the substance of the mucous membranes of the palate, cheeks and gums. This variety is associated with great debility and depression, moderate fever and disorders of digestion. Marked *anæmia* results from the hemorrhages.

Purpura urticans is a combination of *urticaria* and *purpura sim-*

plex. It is characterized by "rounded and reddish elevations of the cuticle, resembling wheals, but which are not accompanied, like the wheals of urticaria, by any sensation of itching or tingling." They are usually seated on the legs, thighs, breast and arms, and are interspersed with petechiæ. They gradually form and subside within twenty-four or thirty-six hours. Relapses are frequent.

This variety is also associated with malaise, moderate fever, and pains in the limbs.

Prognosis. Purpura simplex and purpura urticans are favorable, but relapses are very frequent. Purpura hemorrhagica is always a grave disease, often proving fatal from exhaustion, or more rarely, cerebral or pulmonary hemorrhage. Recovery occurs frequently, under judicious treatment.

Treatment. Rest and a concentrated nutritious diet, and the moderate use of stimulants, are used to combat the resulting anæmia.

The internal use of *oleum terebinthinæ* is one of the most reliable remedies for all forms of the disease. The following is an eligible formula:—

R. Ol. terebinthinæ.....	f ʒ ij	
Ol. amygdalæ express.....	f ʒ j	
Tinct. opii deodorat.....	f ʒ ss	
Mucil acaciæ.....	f ʒ j	
Aq. lauro-cerasi.....ad.....	f ʒ ij.	M.

SIG.—One teaspoonful every three or four hours.

Among the numerous remedies suggested, the most reliable have been *acidum sulphuricum dilutum* and *tinctura ferri chloridi*. Good results have followed *acidum carbolicum*, gtt. ij–iij every three hours, in cases seen by the author, and a particularly persistent case was cured by full doses of *potassii iodidum*.

"If hemorrhages that are threatened come on with a strong pulse, flushed face, headache and excitement, *digitalis*, *quinina*, and *ergota* are the appropriate medicaments." (Bartholow.)

Locally, to arrest bleeding, astringents and either hot or cold water or ice.



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